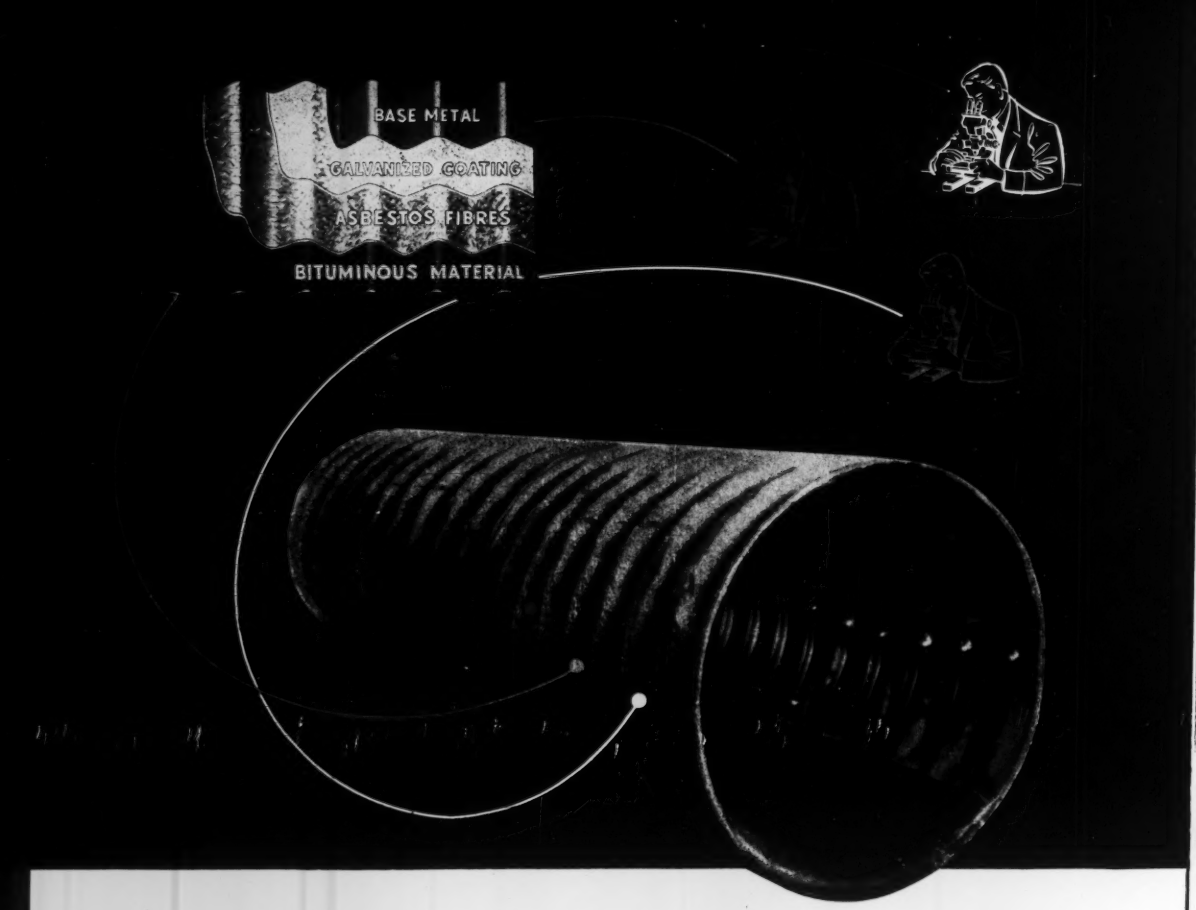

This pipe has a "built-in" life preserver

Conditions that once spelled failure for sewers and other drainage structures are no longer a worry. ARMCO Engineers were determined to develop a pipe that would take severe corrosion in stride and provide long, economical service life.

They did it by applying a rot-proof and non-deteriorating coating of asbestos. This inert mineral product is inseparably bonded to the pipe. As the sheet metal emerges from the galvanizing unit millions of asbestos fibres are partly embedded in the zinc before it hardens. Then the fibres are thoroughly impregnated with a special saturant and seal coat. When the sheets are corrugated and formed they become ARMCO ASBESTOS-BONDED Pipe—a new kind of drainage structure combining the proved strength of corrugated metal design with great resistance to acid, alkaline and saline conditions.

Creating better products to meet specific needs has been the objective at Armco for more than 40 years. A few examples are HEL-COR Perforated Pipe, STEELOX Buildings, FLEX-BEAM Guardrail, PIPE-ARCH, and sturdy, durable MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve your most difficult problems.

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"All aboard" for 14 million crashing tons

A typical example of B.F.Goodrich product improvement

THOSE are chunks of coal, some weighing a ton apiece, on their way to a boat ride. It's a rubber conveyor belt they are riding, to ship side. Coal cars crash these heavy lumps onto the belt from a height of 15 feet. It's a wonder that belts lasted 5 years and carried 6 million tons of coal; that was a testimonial to rubber.

But still B. F. Goodrich wasn't satisfied. Engineers here had been working on a new principle of conveyor belts called cord belts, for just such crashing impact. In this exclusive design individual cords run lengthwise, each floating in rubber — the whole belt can "give" and absorb impact blows whereas old stiff woven belts had to stand and take the blow and so of course tore, broke, wore out.

The belt in the picture is the first cord conveyor belt ever installed. Instead of the 5 year previous record it has already lasted 11 — and look what it's still carrying today! Instead of 6 million tons it has carried 14 million, and engineers estimate it's good for 6 million more.

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ENGINEERING NEWS-RECORD

VOLUME 143 OCTOBER 13, 1949 NO. 15

WALDO G. BOWMAN
Editor

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BY Nello L. Teer

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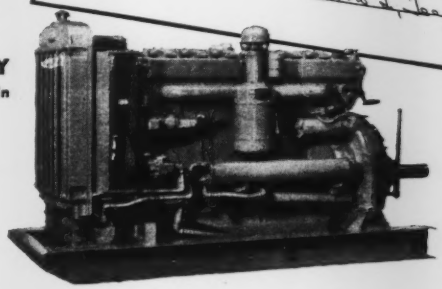

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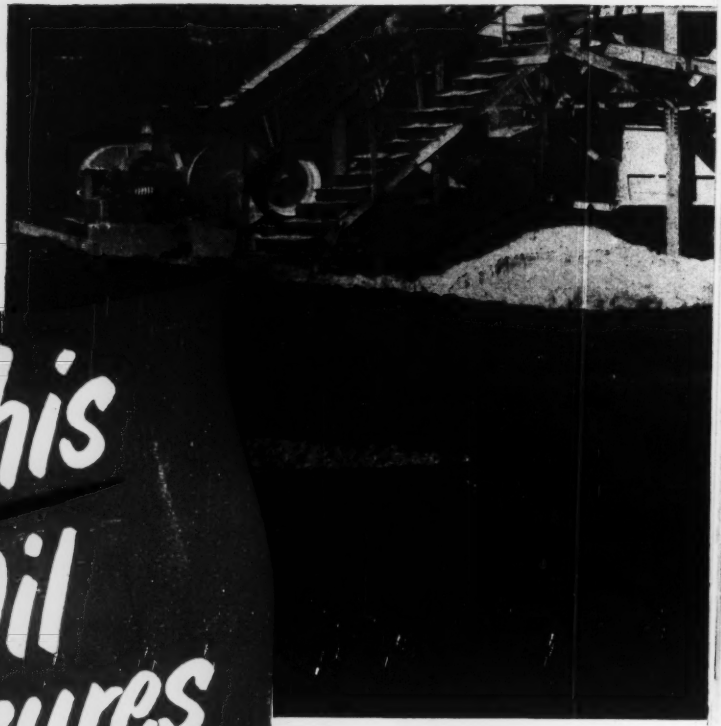

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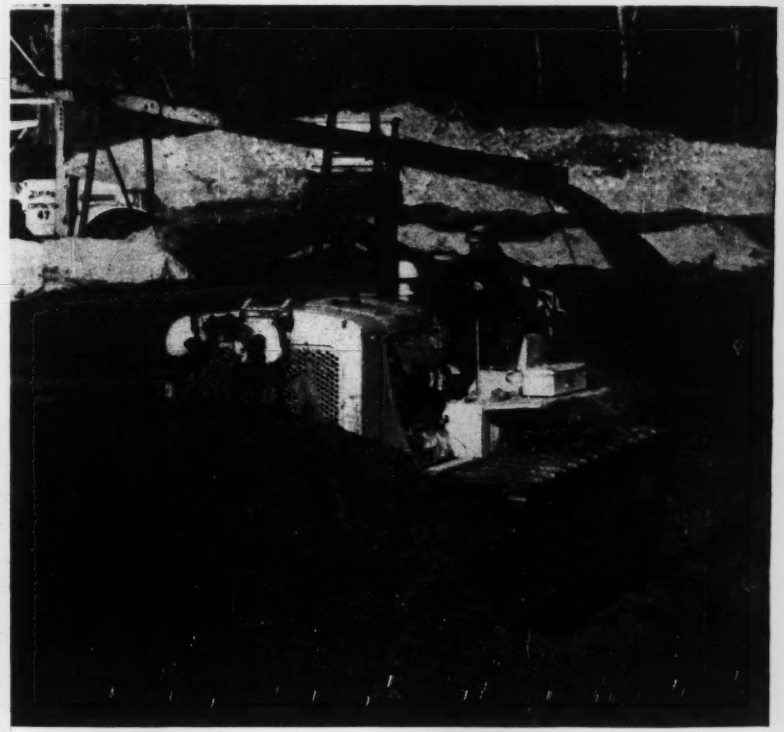

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Here are two new rubber mounted Model 190 BAY CITY cranes, both having 25 ton capacities — the CraneMobile on the left — the CraneWagon on the right. Both are designed and built to meet requirements of heavier lifts and longer booms. The 190-T61 CraneMobile is a two-engine job with speeds up to 35 M.P.H., 9 feet wide over tires with outriggers that extend to 17 feet. The 190-CW CraneWagon is a self-propelled one-man operated crane with 4 travel speeds, 11 feet wide over tires and outriggers. Both are amply powered and equipped with independent boom hoist, power load lowering device, hi-collapsible gantry, pin-connected boom and many other features that will give you more crane value for your dollar. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.

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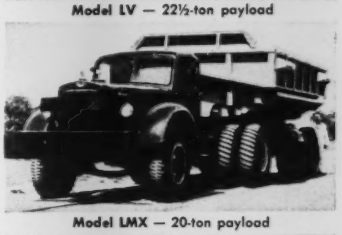

Model LMX — 20-ton payload

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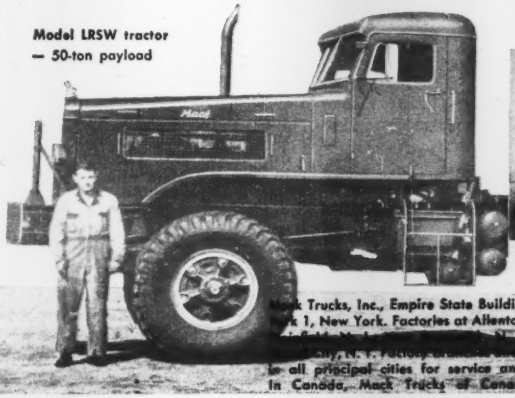
Model LRSW tractor — 50-ton payload



Model LR — 32-ton, bottom-dump coal hauler

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NEWS BRIEFS

No Time Wasted—Builders of New York's latest skyscraper—the 36-story office building at 100 Park Avenue—claim a record the steel erection on the project. Steel began going up early in March, (ENR March 10, p. 10) while excavation work was still underway, and was completed July 26. Initial occupancy now is scheduled for December. The building occupies a blockfront site and will have 840,000 sq. ft. of floor area. It will be completely air-conditioned. Cost of the structure will be $20,000,000.

Millions for Schools—In Virginia 26 counties are seeking $58,578,741 for school projects, and 19 cities and towns want $40,000,000 for the same purpose. The North Carolina State Board of Education has allocated among the 100 counties of the state $50,000,000 which has been made available in state funds for school building. It has also approved the first 13 projects to be undertaken which call for spending $1,560,000 in nine counties.

Funds for Hartwell Dam—Representative Hare of South Carolina says that most of the federal grant of $40,000,000 for flood control work in the Savannah River basin will be used for the proposed Hartwell Dam to benefit Georgia and South Carolina.

State Office Building Plan—Governor Earl Warren of California has signed a bill permitting the state to contract with private interests for construction of a $5,600,000 state office building on Capitol Mall, Sacramento. The director of finance may lease state-owned property to interests which will erect the building and lease it back to the state. After 40 years, the state will own the building. Governor Warren reported plans for an agreement with an insurance company for construction of a two-block building. Several large companies are willing to construct state buildings under such conditions, he said. The plan is expected to save the state money in the long run.

Telephone Expansion — New York Telephone Co. officials outlined expansion plans expected to cost $462,000,000 when they testified in Albany at a renewal of hearings on the company's application for a rate increase. Other testimony by company engineers concerned an estimated $100,-

(*Continued on page 12*)

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IF engine repairs are eating hippo-size bites of what ought to be your profits, better consider the quality of *lubrication* your engines are getting. Chances are, Quaker State HD Oil could save you money.

There's no finer, more protective engine lubricant than Quaker State HD Oil. It's made from 100% pure Pennsylvania grade crude oil, best ever discovered anywhere in the world. It's refined by the most advanced methods in Quaker State's four great, modern refineries. As the result, it gives dependable lubrication under all operating conditions. It helps prevent the formation of sludge, gum or varnish—in fact, it actually *cleans* as it lubricates.

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VERTICAL CIRCLE: 4" diameter graduated to ½ degrees on solid silver, with double direct vernier reading to one minute, with removable aluminum guard to circle.

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WEIGHT: Instrument 10 lbs., tripod 11½ lbs. *Note: Extension leg tripod No. 9070 extra.*

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Montana's Highway Needs — According to State Highway Engineer C. E. Stahl, Montana's highway needs include construction or reconstruction of 4,707 miles of primary roads and building of 5,744 miles of secondary roads. He said ultimate construction and reconstruction costs will total about $500,000,000. Of this, about $46,000,000 would be paid from forest highway funds and 57 per cent of the remainder by the federal government, leaving $195,000,000 as cost to the state. He added that at present the state has about $3,175,800 annually to match federal funds, making about $8,000,000 available each year for its road program. He said this amount is inadequate, as the construction of modern highways costs about $50,000 a mile, maintenance takes $700 a mile annually, and surface renovation costs $18,000 a mile every 15 years.

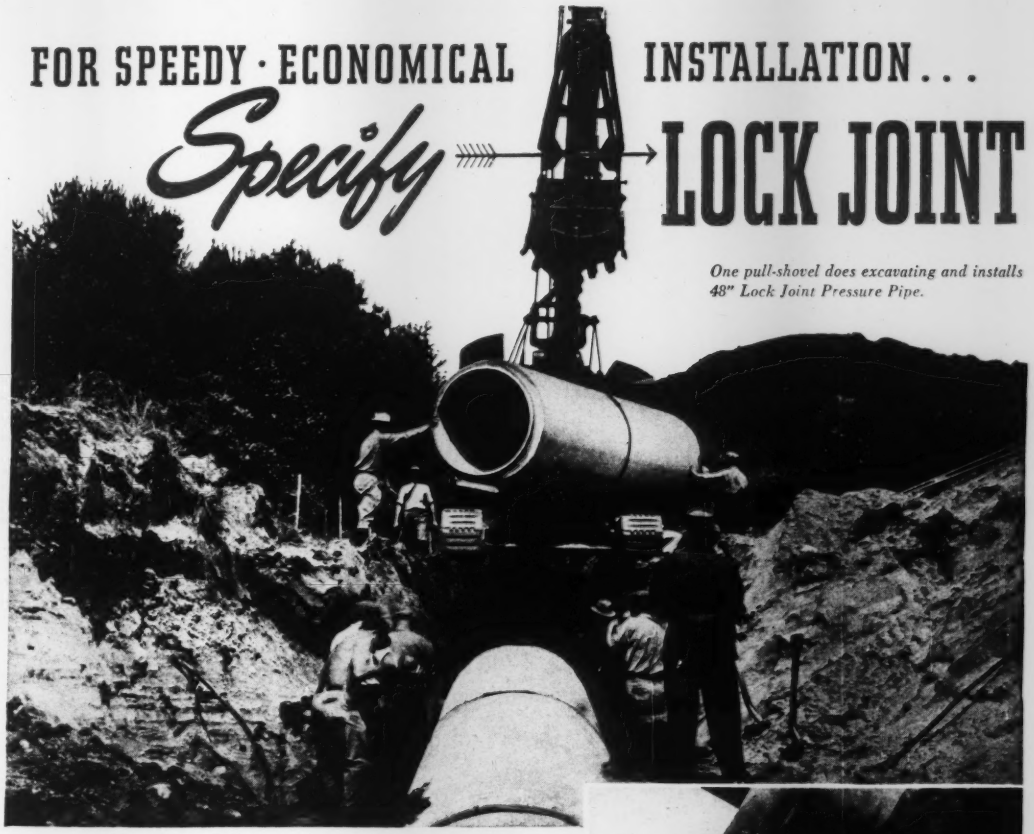
Stream Pollution—The Indiana State Board of Health has cited the city of Connersville and its industries for violating a stream pollution abatement order. Robert Heider, assistant chief of sanitary engineering for the board, said his office issued an abatement order in December, 1945, with a compliance date of July 1, 1947. This was extended to July 1, 1948, and the city has been violating it since. He said Connersville officials have prepared plans for an interceptor sewer and a sewage treatment works but no plans for financing.

Profitable Bridge—Old Lyme-Old Saybrook, Conn., Bridge Commission reports the Raymond E. Baldwin Toll Bridge across the Connecticut River is likely to yield a smashing surplus from its 10-cent tolls. The 1945 General Assembly authorized $6,000,000 for construction of the bridge. E. Lea Marsh, Jr., chairman of the commission which had charge of construction, reports final construction figures may show a startling saving of from $500,000 to $750,000. This money is invested and yielding interest. The surplus will go into the sinking fund to retire the 30-year bridge bonds.

Correction—A picture caption describing the new plant of the Chicago Pneumatic Tool Co. at Utica, N. Y., in ENR Sept. 29, p. 28, erroneously credited National Engineering Co. as designer of the $5,000,000 plant. Actual designer was Walter Kidde Constructors, New York. National designed certain equipment installed in the plant.

FOR SPEEDY · ECONOMICAL INSTALLATION . . .

Specify LOCK JOINT

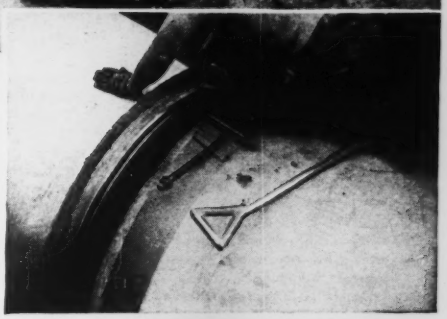


One pull-shovel does excavating and installs 48" Lock Joint Pressure Pipe.

• • • With its exclusive Rubber and Steel Joint, Lock Joint Reinforced Concrete Pressure Pipe is installed rapidly and efficiently in extremes of heat or cold—in wet ditch or dry.

Only one machine is required to make the excavation and install the pipe. No caulking or bolting of the joint is necessary, and the pipe may be back-filled immediately. The Rubber and Steel self-centering expansion joint is flexible to accommodate ground settlement, and is watertight at any internal pressures common to American Water Works practice.

Today, millions of feet of Lock Joint Reinforced Concrete Pressure Pipe, equipped with the Rubber and Steel Joint, installed at low cost and needing little or no maintenance, are giving unfailing service throughout the Western hemisphere.



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PRESSURE PIPE PLANTS: Wharton, N. J. • Turner, Kan. • Detroit, Mich.

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SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

One OF MANY UNSOLICITED BUT APPRECIATED LETTERS FROM . . . *Satisfied Users*

JOHN W. TAYLOR

J. T. COAL COMPANY
PRODUCERS AND SHIPPERS OF QUALITY COAL
NEW LEXINGTON, OHIO

JOHN A. TECCARDIN, JR.

November 9, 1948

Hendrix Manufacturing Company
Mansfield, Louisiana

Gentlemen:

In 1947 we purchased a Hendrix 2-1/4 yd. Heavy Duty Dragline Bucket to replace a 2 yd. heavier weight bucket of another make. The gross weight of each bucket loaded was practically the same.

After 2,000 hours' operation with each bucket in hard shale and rock, most of which had to be shot, our 2-1/4 yd. Heavy Duty Hendrix had moved 52,000 more yards than the other make bucket on the same machine. The increased production soon returned to us the investment in your bucket.

We have found that the strength, durability, and digging and loading performance of a bucket are not measured by bucket weight alone. The lighter weight and larger capacity Hendrix Bucket not only swings more pay dirt per hour but costs less to maintain. Our maintenance cost on the Hendrix Bucket was only 1/7 the maintenance cost on the other make heavy duty bucket during the same number of hours of operation.

More dragline capacity, less down time for maintenance, and lower maintenance expense all contribute toward lower stripping cost with your bucket. We are taking this means of expressing our appreciation of a fine product.

Very truly yours,
J. T. COAL COMPANY
John W. Taylor

JWT:jo

You, too, will realize a larger profit on your operations when you hitch-up a Hendrix Lightweight Dragline Bucket. They're *engineered* by men with "know-how" to give you more load inside the bucket with maintenance-free operation!

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

Takes the shock out of shock loads

Use Maltese Cross Shock-Pad Conveyor Belting to eliminate the shock of high replacement costs

Now it's back again—the different conveyor belt—the toughest of all tough, shock-resisting conveyor belts! For many, many years, a great number of users over the country have relied on Maltese Cross Shock-Pad Conveyor Belting for their most severe haulage jobs.

That's because Hewitt engineers designed this belt to withstand every conceivable haulage abuse, especially the punishing shock of heavy, abrasive materials.

It's all in Hewitt's patented* exclusive Shock-Pad construction, a built-in pad of thick, specially compounded shock-absorbing rubber which takes the impact instead of transferring it to the belt carcass.

But that's not all! This shock pad, by absorbing impact, lengthens the life of the tough abrasion-resistant rubber cover. It shields the carcass from rupture. And it helps assure perfect troughing.

So for the best in conveying heavy abrasive material, insist on Maltese Cross Shock-Pad Conveyor Belting. Call your local Hewitt distributor listed in the classified pages of your telephone directory. Or write Hewitt Rubber Division, 240 Kensington Avenue, Buffalo 5, New York.

HEWITT

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Shock-Pad Conveyor Belting

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Wherever you are, Ryerson trucks are rolling your way every day . . . speeding shipments of every kind of construction steel from nearby stocks.

Reinforcing bars, structurals, plates, sheets, wire mesh—an endless range of kinds, shapes and sizes make up this daily stream of steel. In pounds and tons it flows to contractors and builders from the nationwide network of thirteen big Ryerson plants.

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You can be sure of quick, accurate delivery from your nearby Ryerson plant; so call us next time you need steel from stock—reinforcing or any other product. We'll get it to you faster because we're coming your way every day.

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Hi-Bond from Ryerson for Greater Grip

Unique scientific design gives Hi-Bond reinforcing bars a greater bonding grip in concrete. This test-proven grip results in stronger construction and increased resistance to the formation of tensile cracks. Ryerson plants in Chicago, Detroit, Cincinnati and Los Angeles carry Hi-Bond in stock for immediate shipment. Write for bulletin.

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JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI
CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

THE CONSTRUCTION WEEK

THINNER FOR SAFETY—Plastering contractors have been given a preview of a 1½-in. solid partition of lightweight-aggregate plaster (perlite) on metal lath that is reported to qualify as an effective one-hour fire barrier. Sponsored by the Metal Lath Manufacturers' Association of Cleveland, Ohio, the new development is expected to: Supersede the 2 in. solid plaster partition—up to now thinnest able to meet fire-endurance and hose-stream tests; save space and cut dead-weight (it weighs about 5 psf.)

RESEARCH TO THE FORE—Housing research features of the 1949 Housing Act are likely to be the most important part of the measure. Raymond M. Foley, HHFA administrator told Producers Council bigwigs at Chicago recently that his organization—which will correlate private and governmental research as well as pursue its own investigations—intends to attack high costs through economic, as well as technical research. Points for attack, Foley said, will include: Development of more flexible building codes; developing finance and credit devices to broaden the base of home ownership; strengthening the industry's production structure; arriving at a more scientific basis for design of structures. Other research will include lightweight concrete, wind and snow load design factors, determination of air flow for design of heating units. Foley's plan is to make his agency a central information point for the whole construction industry.

DEFINITION DUE—Answer to a burning labor question—just what is collective bargaining?—may come out of a year long study just started by a Senate labor subcommittee. Ever since the Wagner Act, in 1935, declared that free collective bargaining is a national policy there's been dispute over how to practice it. Even the recent steel fact-finding board called the postwar practice of "pattern" bargaining a violation of accepted concepts.

ATTACK ON CODES—Another attack on the nation's hodgepodge of antique building codes is being sparked by the National Association of Home Builders. Backed by a member-contributed fund, NAHB is urging local affiliates to set up local building code committees, to play a major part in writing codes or revising existing ones. The NAHB move is in cooperation with the Building Officials Conference of America, which has already produced two codes (Basic and Abridged) now up for final adoption at BOAC annual conference Oct. 31.

POINT FOUR FUNDS—President Truman's draft of his "point four" world technical assistance program for 1950 calls for the seemingly tiny amount of $6,562,500 for reclamation, hydro power and flood control. And of this sum, the U. S. would put up $4,375,000—the remaining $2,187,000 would come from recipient countries. Catch is that this money would cover costs of preliminary surveys in the world's underdeveloped areas. Dollar loans from Export-Import Bank, or the International Bank for Reconstruction will finance actual construction.

EFFICIENCY NOTE—A 17-man British construction industry team—back in England after a six-week tour of the U. S., summed up its observations and conclusions in a preliminary report last week. Major conclusion: The U. S. construction worker, sparked by the incentive of uniformly high pay; user of a vast number of portable tools; and beneficiary of one of the most efficient system of planning and design, is able to produce 50 percent more work for no more effort than his British counterpart. "The American worker," said the Englishman, "works more effectively than does the British . . . He puts everything he can into his work without holding back . . . The tempo of his job is fixed from the beginning like a machine belt in a factory." Other points of interest, said the visitors, were: Minimum use of scaffolding; use of ready-mixed concrete; use of cinder blocks as backing for exterior walls; asphalt shingles as roofing materials.

UTILITIES CUT BORROWING—A sharp drop in new-money offerings by utility companies in the third quarter of the current year was viewed by financial experts as "a more orderly approach" to financing a $9 billion expansion program, rather than as a slump. A survey of transactions by power and light companies shows $189.8 million of new securities sold to the public in the quarter —46 percent less than the previous period. Said the New York Times: "This decline reflects nothing more than the approach to completion of bond financing, and an extension of the construction period, after delivery schedules indicated that generating equipment can be bought at lower prices later."

Thanks to Tanks of Concrete

NATION'S LEADING BREWERS PROTECT QUALITY, IMPROVE EFFICIENCY

Starting tanks—**ANHEUSER-BUSCH**, St. Louis—fore-runner of many other concrete tanks at this great brewery.

THEO. HAMM Brewery, St. Paul, equipped throughout with open and closed fermenting tanks of 'Incor' concrete.

GRIESEDIECK BROS. Brewery, St. Louis—multiple-story closed fermenting tanks. Tanks, walkways, walls, stairways form completely monolithic structure.

THE good brewer takes infinite pains in blending and cooking selected materials—then beer's quality and flavor depend on what happens in the fermenting and storage tanks. Twenty years ago, Borsari Tank Corporation of America advanced brewing technique with 'Ebon'-lined tanks of concrete.

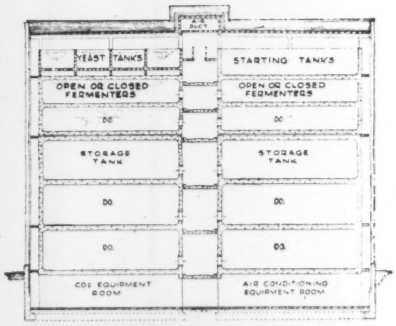
Careful investigation of cements led Borsari in 1933 to use 'Incor' 24-Hour Cement. Outstanding performance resulted in continuing use of 'Incor' in repeat projects.

Designed to fit beer-making techniques, Borsari tanks are built with equal facility in new or existing structures, in any size and shape. The 'Ebon' lining is fused to the concrete.

Borsari uses 'Incor' for economical job progress, because: (1) concrete must gain service strength rapidly for early stripping; (2) concrete must cure watertight in only 24 to 48 hours; (3) in Winter, 'Incor'* cuts heat-protection costs by 60%, speeds job progress.

*Reg. U. S. Pat. Off.

Right, typical multiple-story Borsari installation. Below, center, fermenting tanks, **DAWSON BREWERY**, New Bedford, Mass., built into existing building. Below right, fermentation tanks, **MILLER'S 'HIGH LIFE'** Brewery, Milwaukee. Introduced in U.S. in the early 30's, Borsari tanks now in use here total half-million barrels' capacity.



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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

CONSTRUCTION TRENDS

Home Building Record Ahead

Home building is hitting a record-smashing pace.

This year promises to see an all-time record in the number of nonfarm houses started. Barring a sharp and sudden drop this fall, 1949 starts may run between 940,000 and 950,000.

That would mean that 1949 will shade last year by 10,000 starts or more, and it will edge out the previous all-time record of 1925, when 937,000 homes were started.

New Light on Market

The clearest light yet thrown on how many Americans own homes, what they spend on their homes, and how many want to buy their own homes, came from the Federal Reserve Board last week.

Based on a nation-wide survey of homeowners made by the board in early 1949, the report has a major bearing on prospects for home building and for the commercial, highway, and related construction that comes with new homes.

Here are highlights of the report, taken from the Federal Reserve Bulletin for September:

1. Roughly 20 million nonfarm families—about 15 percent the total number—own their own homes. About 18 million rent. Some 2 million—many of whom are single persons or older couples—neither own, or rent.

2. Roughly half of all families owning their own homes at the time of the survey had bought them since Pearl Harbor. Three out of ten had bought since the end of the war.

3. Homeowners believe that the average market value of their homes is about $9,100. Altogether, then, their properties are valued at roughly $100 billion. Along with the value of rented properties, that would give a total value of all housing units of $300 billion or more.

4. More than half (55 percent) of the homeowners hold their homes free and clear of debt. An average owner was found to have an equity (market value minus balance on mortgages) of somewhere between $6,500 and $7,000.

The survey also turned up some surprising results on what home owners spend to maintain and repair their homes. Nearly two out of three home owners reported they had improved their properties last year. In all, they spent roughly $6 billion in making these improvements.

That $6 billion bulks large compared to the $7.2 billion put into new private residential construction last year, by estimates of the Department of Commerce. It suggests that almost as much labor and material go into maintenance and repair as go into new housing.

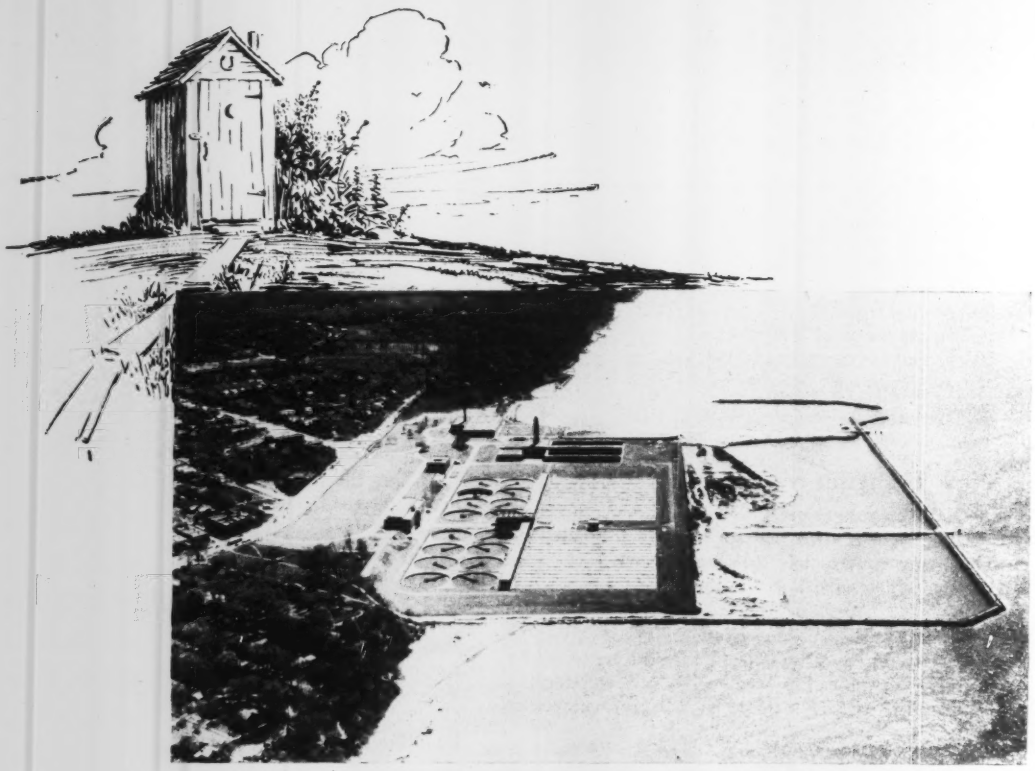
Perhaps the most significant findings of the survey were those throwing light on the trend toward home-ownership. Over the decades a larger and larger share of American families have become homeowners. This trend got powerful and added impetus during the war. Encouraging the move are amortizing mortgages and a higher general level of incomes. And more city workers are taking to rural and suburban living. Amortizing mortgages make it possible to work off a mortgage over 15 to 25 years without fear that the whole balance will be called at once if times turn bad. Incomes have more than doubled since 1939. The trend toward suburban living is clear in the postwar surge of home building so much in evidence outside of major cities.

But it is also true that many families have bought homes in the last ten years simply because they could find nothing to rent. Undoubtedly there are many of them who might prefer to rent if homes were available at a fair rent. However, there is no way of knowing how many families are in this class.

The board, however, asked families if they had plans to buy or build in the next four years, 1950-53. Some seven percent of all families said they did plan to buy or build before 1953, another 10 percent said they "probably will", and about 14 percent were undecided. From this—taking all those with definite plans and half of those who said they would probably be in the market—it seems there is a total demand for construction of more than five million homes in the next four years.

In addition—a factor which the Reserve Board did not try to measure—there will be about 500,000 new families formed each year. They will swell the total demand for housing.

Not all of these families, of course, will buy new homes. But the survey results make it clear that—if business continues to be good, and if contractors provide new houses at attractive prices—there is demand enough to keep new residential construction close to its 1949 level for several years to come.



NOW MODERN Disposal Plants *WITH*

ROTOVALVES *IN SERVICE*

LEADING in design and construction to meet peoples' needs, prominent engineers have turned, in ever-increasing numbers, to Rotovalves by Smith. For here is a cone valve in which the plug lifts, rotates and seats itself; which provides minimum loss, and gives positive, quick action. Obtainable in a complete line of sizes, with either manual, hydraulic or motor control, for *stop* and *check service* for Sewage and general Sanitation needs. *Shipment from stock.* Send for full data pertaining to your *own* problem!

S. MORGAN SMITH Co.

YORK. PENNA. U.S.A.

Building Code Unification

FINAL APPROVAL may be given the Basic Code of the Building Officials Conference of America by the building officials at their annual meeting Oct. 31 to Nov .4. If so, another model code will be added to the already overcrowded field, and many community leaders will be even more confused as to which to recommend.

There is grave danger that competition between the sponsoring groups of the various model codes may destroy confidence in them and undo all the good work done to date. It is good news, therefore, to learn that an effort is being made to get the sponsoring groups to settle their differences. A Joint Committee on Unification of Building Codes has been formed under the chairmanship of W. E. Mallielieu of the National Board of Fire Underwriters to achieve unification of existing model codes. This committee is said to have received splendid cooperation to date from all but the Pacific Coast Building Officials Conference, whose code has been accepted widely in the West.

At the next meeting of the joint committee (Oct. 28 and 29 at the Bureau of Standards in Washington) the first step will be getting the sponsors to agree on basic definitions. The success of that attempt to reach agreement on a simple matter like definitions may well determine whether this country soon will have either a national model building code or a war between code sponsors. Building officials will find it well worthwhile to assist the joint committee in its work.

Professionals Reclassified

PROPOSED REVISIONS in wage-hour regulations that were made public by Administrator William R. McComb recently (ENR Sept. 22, p. 13) will make some important changes in the classification of professional employees if put into effect in their present form. The minimum salary for administrative and professional employees would be raised from $200 a month to $75 a week, and men who can be classified as professionals must perform work requiring advanced knowledge in a field of science or learning or must perform creative work in an artistic field. To continue in this professional class their non-professional work must be limited to 20 percent of the hours they work each week.

Heretofore the regulations did not clearly define what was to be considered professional work, and as a result there was a tendency to put as many men as possible into that classification because payment of a premium for overtime was not required. Some employers probably capitalized on the desire of many young engineers to be included in the professional class.

The higher salary bracket for professional employees and the more exact and restrictive definition of what work by men in that higher bracket can be classified as professional will tend to reduce the number of engineering employees in the professional class in the future. This change appears to have both favorable and unfavorable aspects.

The closer restrictions on the profesional classifications seems desirable. Certainly it will facilitate the work of those who seek to make the possession of a license to practice engineering one of the prerequisites to classification as a professional.

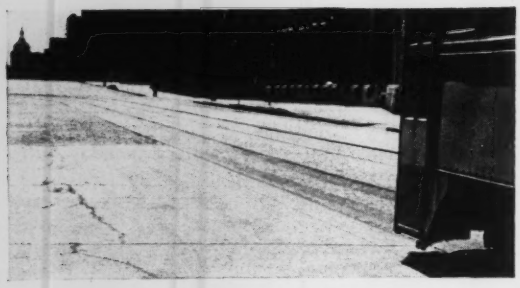
On the other hand it will postpone the day when the young engineers who seek professional status can be moved over into that group. In large organizations where the bulk of the employees are unionized it may mean that more of these men will have to put in some time as members of a union having policies with which they are not in agreement. Even that may not be without its favorable aspects. Some have suggested that it would be a valuable experience for every young engineer to start out in a union.

Because of these considerations the effect of the new regulations will be watched with interest even outside the areas directly affected by the federal wage-hour law.

A New Aid for Highway Engineers

EXPLORATORY METHODS that have saved thousands of dollars for oil companies and mining companies in their prospecting work show promise of aiding highway engineers in determining what underground conditions are to be met on new highway construction. Equipment for making geophysical studies has been developed by the Bureau of Public Roads in a form that is light enough for a four-man field party to carry along the line of a proposed road (p. 40). Studies of soil resistivity can be conducted at a cost of between $75 and $100 per mile in rough country. Seismic testing costs are higher, running to $200 to $450 per mile.

As with all new methods, much has to be learned as to the possibilities of those described in this issue. Also, both engineers and contractors will be slow in putting full faith into the results in the early days of such testing. What appears probable now is that geophysical methods can be used to greatly reduce the amount of test boring and drilling. One result seems certain. Such a combination will put an end to the many controversies that have arisen when tests pits happened to end up on a high or low point of an irregular buried rock surface, resulting in a large error between estimated and actual rock quantities. Geophysical methods reveal the existence of such irregularity, thus indicating the need for more test pits.



Ten Years Ago...

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today.... Added Durability and Improved Appearance in structural concrete made with DURAPLASTIC*

Promontory Apartments, Chicago, Ill., nearing completion. Duraplastic used throughout in concrete columns 12 feet deep with network of steel bars and beams. No sign of bleeding or segregation. Contractors report a smooth surface free of blemishes or air-bubbles. Architect: Pace Associates; Structural Engineer: Frank J. Kornacker; Contractor: Peter Hamlin Construction Company—all of Chicago.

From initial paving installations . . . to the first structural job . . . to beautiful, modern structural achievements like the one shown here, architects, engineers and contractors have come to rely more and more on the extra durability and improved appearance of concrete made with Atlas Duraplastic air-entraining portland cement.

In Duraplastic's rapid ten-year growth, its advantages have been applied to all types of mass and structural concrete—for foundations, walls, columns, and floors. It's ideal for slip-form, gunite, stucco and similar uses.

With Duraplastic, less mixing water is needed for a given slump. The resulting mix is more plastic, more workable, more uniform and cohesive. It's easy to place and finish. Water-gain and segregation are reduced. Surface appearance is improved and has higher resistance to the effects of weather-exposure.

For structural concrete needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for new free booklet, *"A Decade of Duraplastic Air-Entraining Cement." Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17, New York.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ENR-D-94

ATLAS DURAPLASTIC TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

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ENGINEERING NEWS-RECORD

OCTOBER 13, 1949 VOL. 143 NO. 15

Steel strike hits building as shape shortage grows

Suppliers hold "ample" stocks of reinforcing bar and mesh for 30-45 day period—Shutdown of fabrication plants cuts supply of structural shapes as normal building season ends

With the nation-wide strike against the steel industry not three weeks old, a large segment of the construction industry is already hard hit, it became apparent last week.

The dependence of a large part of the industry on steel shapes that are tailored for specific jobs is the factor in the effect of the steel strike on construction.

Steel industry sources pointed out that when the big mills went down, most of the fabricating plants went with them. Last week, experts estimated that more than 70 percent of the nation's shape-fabricating capacity was shut down.

It was their opinion that the rest would follow shortly if the strike continues to cut off supplies at the source. (Many of the major fabricators have labor contracts with the same unions that struck the steel mills.)

Steel rods still ample

The situation, however, was not considered too bad in another phase of construction—the supply of reinforcing bars and wire-mesh reinforcing. A quick survey of major suppliers of these items indicated that the warehouses could supply normal demand for another 30 to 45 days, if the strike should continue that long.

Some of the shortage of shapes can also be supplied for a time from general warehouses, but steelmen reiterated that this supply has limited application, and is subject to rapid depletion.

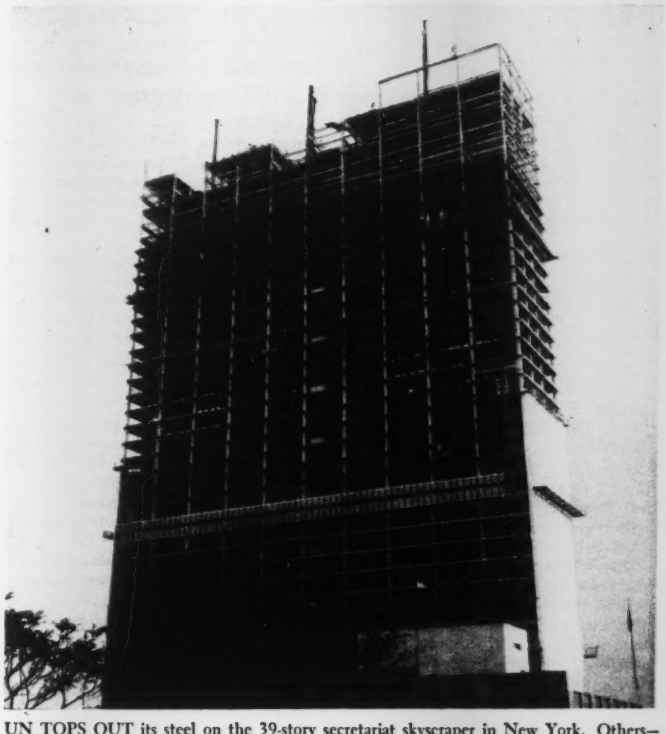
On the basis of normal expected total steel shipments for 1949 (about 2,000,000 tons) some steelmen estimated that steel worth about $8,000,000 erected isn't going out, each week the strike continues.

Of course, the general effect will be cumulative, rather than sudden. But such an interruption will have some lasting effect on construction anyway, steelmen added. They admitted that it would be theoretically possible to pick up production immediately the strike was called off. "But you don't produce steel from a cold furnace just by pushing a switch," they pointed out.

"It's as simple as this," one engineer commented, in explaining the loss from lack of shapes:

"You have ordered shapes for a specific job. As fast as you get them, you fabricate them. But if, at the time the strike starts, you have all of tier one complete—excepting for columns 1, 5 and 7—your tier cannot be erected, and the stuff on hand just clutters up the yard. A great deal depends right now on luck. If needed steel was by chance ordered in the right quantity at the right time, a job may continue. For example, a number of major New York skyscrapers were topped out just as the strike hit.

Although what used to be considered the normal construction season is well advanced—and thus the effect is not as serious as it might have been had the strike come earlier—large building work, highway work requiring numerous structures, bridges and similar projects began to feel the effect almost at once.



UN TOPS OUT its steel on the 39-story secretariat skyscraper in New York. Others—not so lucky—have jobs still going up and are beginning to feel the effects of the steel strike now in its third week. (Wide World Photo)

Plan big road projects for Seattle and vicinity

Bringing one step nearer the call for bids on the first section of the $8,500,000 Alaskan Way viaduct project at Seattle, Wash., judgments aggregating $305,747 have been filed in Superior Court there, representing agreements reached by the city's appraisers and the owners of property involved.

The judgments cover property on the portion of the viaduct route between First Ave. and Battery St. and Alaskan Way and Pine St. Another group of "agreed judgments," covering the same portion of the route, will be filed Nov. 28, after which condemnation suit trials will start in all cases where aggreements on damages have not been reached, according to A. C. Van Soelen, city corporation counsel.

Three contracts for job

The city plans to build the viaduct under three contracts, first calling for bids on the northern section in which Superior Court judgments already have been filed.

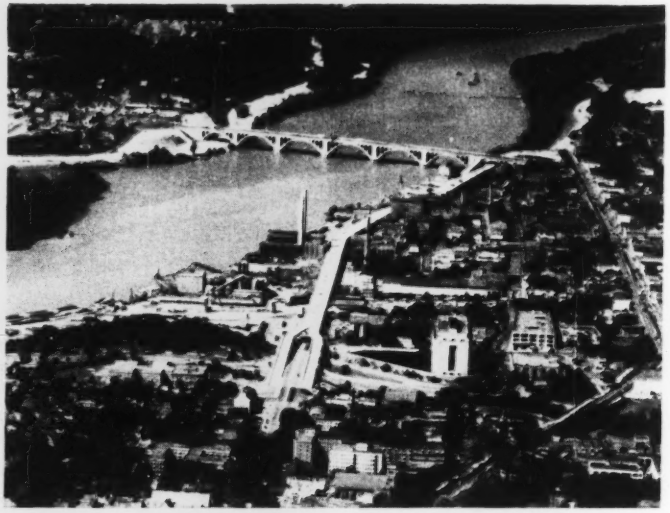
Meanwhile, the city engineering department is studying a proposal to approach the viaduct at the north end through a tunnel rather than by a depressed roadway. Test holes now are being drilled to determine character of the foundation.

The proposed four-lane tunnel would extend several blocks from First Ave. under Battery St. to Denny Way, coming out on Aurora Ave., the main arterial out of the city to the north, near John St. Battery St. would be restored for use as a surface street, according to City Engineer R. W. Finke.

To improve 550 miles

With a $25,000,000 program required to improve 550 miles of road adjacent to Seattle, and revenue totaling only $2,000,000 a year, King County Engineer D. L. Evans has proposed that the state legislature be induced to allow counties to establish local improvement districts or that a small bond issue for necessary funds be voted upon.

Most of the 450 miles of county streets serving densely populated districts in the 4-mile fringe around the city limits and another 100 miles elsewhere in the county should be paved with hard surface material, Evans said in a prebudget program submitted to county commissioners. This would still leave more than 2,000 miles of less important roads to maintain and improve.



WHITEHURST FREEWAY was officially opened last week in Washington, D. C. The $3,487,000, 4-lane, elevated express approach to Francis Scott Key Memorial Bridge over the Potomac will eventually tie in with Washington-Baltimore Freeway, now being constructed. Named for the late H. C. Whitehurst, former D. C. highway director, the half-mile-long structure will by-pass Georgetown streets with 30,000 vehicles per day. Alexander & Repass Co., Des Moines, held the construction contract.

Contempt ruling reversed in Ohio registration suit

The Ohio Court of Appeals recently decided that a lower state erred in holding Raymond D. Hulslander in contempt of an injunction ordering him to cease advertising his firm as a mechanical and structural engineering company.

Suit had been brought in Common Pleas Court by the Ohio Society of Professional Engineers (ENR Sept. 16, 1948, p. 70) against Hulslander, president and sole owner of Aimes Company, Inc.—called Aimes Engineering Co. at the time suit was filed. Hulslander was held in contempt of an injunction ordering discontinuance of the term "engineering" issued at the time of the hearing.

Hulslander had been fined $500 and sentenced to 10 days imprisonment Sept. 2, 1948, on the contempt finding. He served one day in jail before being freed, pending appeal of charges.

Contempt charges have now been dismissed by the higher court, which found that since he had not used "professional engineer" or "professional engineering" in his firm's name or advertising, he could not be in contempt of the lower court order.

Hulslander is neither an engineering school graduate nor has he a professional engineer in his employ. But Ohio laws do not require those engaged in design and fabrication of manufactured products to be registered professional engineers.

THE COVER

Handling a jackhammer is no soft job—not even under normal conditions. And when rock to be drilled is as sheer as the right abutment of Hungry Horse Dam, it takes two men to handle a hammer—two sure-footed men suspended from above by safety lines.

Preparation of abutments was one step in the make-ready process for pouring concrete. Hungry Horse will take 3,331,000 cu. yds. of it during the next five years of its construction. Bureau of Reclamation is the owner; General-Shea-Morrison, the joint contractors. The $43,400,000 project is on the south fork of Montana's Flathead River (ENR April 14, p. 58).

Johns Hopkins Buildings—Johns Hopkins Hospital, Baltimore, Md., will start soon on its first big construction program in nearly 20 years. The Public Health Service of the Federal Security Agency has made the hospital two grants totaling $1,235,000.

Newly-invented machine lays 2,000 bricks a day

What was said to be the greatest advancement in bricklaying since the invention of the trowel was unveiled at Huntington College, Montgomery, Ala., Sept. 29, when inventor Paul Sommers introduced his new bricklaying device.

The Chief of the U. S. Army Engineers, Maj. Gen. Lewis Pick, and other notables in the building industry witnessed an amazing demonstration during which amateur brick masons did an expert job. The amateurs built 8-in. straight walls, square columns, 12-in. walls and circular walls with the exactness of an expert.

Basically the apparatus developed by Mr. Sommers consists of a collapsible metal form that comes in sizes to hold from six to 48 bricks. The bricks can be laid in any quantity without having to line up each one with a plumb line and level. These gauges are built directly into the form.

The device has a scoop to measure the proper quantity of mortar for the bricks and a screed to level it off.

The Sommers bricklayer form is clamped to the base of the wall for the first layer and raised as needed for succeeding layers. Another feature is that it can be used to lay corners without requiring any adjustment to accommodate the header course. This is accomplished by laying the bricks widthwise in the machine.

It is estimated that the device will enable a mason to lay 2,000 to 3,000 bricks a day. Estimated annual saving for the industry is $100 million a year.

There are several different models ranging from one weighing about 20 lb. to the giant size machine of 90 lb. which must be operated by two men.

Urge more power for interstate group in controlling Potomac River basin

Broader financing, constructing and operating agencies suggested for sewage treatment and water supply plants

A cost-saving technique to assist local communities in financing sewage treatment plants was advocated by the Interstate Commission on the Potomac River Basin at its recent annual meeting in Capon Springs, W. Va. Creation of state agencies to issue bonds on a wholesale basis for such works would save localities ½ to 1 percent on interest charges, commission members pointed out.

An even broader financing agency was recommended by the commission's local governments committee. If constitutional limitations of the member states (Maryland, Pennsylvania, Virginia and West Virginia) do not prevent, this committee advocates a basin-wide financing authority as having even greater advantages. As soon as the basin-wide vs. state question is decided, the commission will come out with a definite policy recommendation.

Some states—such as Maryland—would go even farther with agency authority. Some Maryland communities would like to have the aid of a state—or basin—agency in carrying out the functions, not only of financing, but also of building and operating both sewage treatment and water supply plants. Other states in the basin have localities with similar need for technical help.

Bonds issued under the proposed authority would not have state backing. Even so, they would carry lower interest rates than most municipalities can obtain. The bonds probably would be of the revenue type, earning income based on sewer rentals. They would be retired by annual payments from the local community to the agency.

An industrial waste forum during the meeting re-emphasized the importance of steps taken and proposed by industrial concerns to control pollution in the basin. Representatives of eight firms having difficult waste problems discussed disposal as a problem of management. They pointed to the necessity of considering waste disposal at every stage of research, new product development, site selection, plant construction, manufacture and maintenance. For immediate use, they exchanged information on ways by which industry can help clean up the Potomac watershed.

The retiring chairman, Raymond V. Long, commissioner of the Virginia Department of Conservation and Development, recommended wider scope for the commission's activities. He advocated a broader interstate compact that would authorize the commission to undertake a comprehensive program for the conservation and development of water resources in the Potomac basin. The present compact directs the commission's work primarily to pollution control. The interstate compact method, in Mr. Long's judgment, offers the best means of carrying out a comprehensive program.

Harold A. Kemp, sanitary engineer for the District of Columbia and vice-chairman of the commission for the last two years, was elected to succeed Mr. Long. The new vice-chairman is H. G. Knox, technical adviser to the Pennsylvania Sanitary Water Board.

Billig on tour of U. S. speaking on prestressing

Results of research, including tests on full-size prestressed concrete structural members, for England's Ministry of Works, were summarized for an audience of American civil engineers last week. European mass production of prestressed concrete railroad ties and structural members were also described as Kurt Billig, English author and consultant on prestressed concrete, inaugurated a 24-talk lecture tour of the United States at Columbia University.

Mr. Billig's visit to this country from England was on the invitation of Franklin Thomas, president of the American Society of Civil Engineers and dean of students of California Institute of Technology. Dean Thomas supervised arrangements of the trip, which will take Mr. Billig to 24 of the country's leading universities.

Austrian-born and having experience in Russia, France and elsewhere in Europe, Mr. Billig is now consulting engineer on prestressed concrete in London.

Mr. Billig's lecture at Columbia was co-sponsored by the Junior Branch of the Metropolitan Section, American Society of Civil Engineers, and the University's civil engineering department.

ALSO RECORDED

River Keeps Away from his Door—A Seattle business man has asked the King County Commission to restore his riparian rights to have a stream flow by his door. Carl Butterworth had built a $15,000 home on the banks of the Tolt River. Last fall the stream was diverted by a log jam and cut a new channel, thus destroying Mr. Butterworth's view. Now he wants the county to do something about it.

Don't Call Me Mister—Seeking "dignity and business volume," the Pasadena, Calif., chapter of the American Institute of Architects has approved a resolution calling on its members to address each other on all occasions as "Architect," rather than "Mister."

Cooling Off Process—During the recent hot spell a 94-degree temperature expanded the steel framework of the Tomlinson roller lift bridge over the Quinnipiac River at New Haven, Conn., so that the lift would not work. After firemen had played a stream of cold water against the steel for three hours, the steel contracted a quarter of an inch and the lift worked again.

Efficient Incinerator—The garbage disposal incinerator of Timmins, Ont., is in fine working condition. While a garbage truck was being unloaded the other day, the brakes slipped and the truck rolled into the incinerator and was seen no more.

Moderate Speed—Although there's a 70-mile-an-hour speed limit for passenger cars on the Pennsylvania Turnpike, the average speed of such vehicles there last year was only 44.38 miles, the Turnpike Commission reports.

In Glass Houses—Homes in Salt Lake City's new Rose Park subdivision had something extra special—one-way glass in the bathroom windows. New owners found that although light streamed in clearly, the outlook was murky. After a brief investigation it was discovered that outsiders could see in better than insiders could see out. The glass had been installed the wrong way.

Forever Amber—A set of traffic lights in Baltimore, Md., that showed signs of remaining forever amber were pounded into temporary working order by a quick-thinking engineer recently. When Eugene A. Barton noticed many cars stopped at an intersection because the light was stuck at amber and would not change to red or green, he and another citizen pounded on the control box and thus made the light change properly. They kept at it until a traffic maintenance man arrived to relieve them.

Trucking company indicted for Holland Tunnel blast

The Boyce Motor Lines, Inc., whose cargo of carbon bisulphide caused a fire and explosion in the Holland Tunnel, N. Y. City, last May 13, (ENR May 19, p. 11) was indicted by a Federal grand jury at Newark, N. J., Oct. 4. The true bill, presented to Judge Thomas F. Meaney, accused the corporation of unlawfully transporting a dangerous chemical through the tunnel in violation of Interstate Commerce Commission regulations.

No officials of the New York State corporation, which has a freight terminal in Jersey City, N. J., were named in the indictment. The maximum penalty in event of conviction is $10,000 fine on each count.

The indictment was based on evidence presented by fifteen witnesses, including ICC inspectors and administrators.

More than $600,000 damage was caused to the tunnel by the fire and forty-three persons were injured.

Tunnel is being repaved

The granite-block paving of the Holland Tunnel is being replaced after 22 years of service.

Under a $137,200 contract, the Sicilian Asphalt Paving Co. is repaving the grades on the New Jersey and New York sides, a distance of 4,000 ft., with hot-mix bituminous concrete from 3½ to 5½ in. thick.

This material was selected by the Port of New York Authority after tests were made on various surfacings. The decision was based on wearing quality and the speed with which the roadway could be restored to service.

Replacement of the block was made necessary by failure of the bedding, which caused the roadways to become rough and uneven.

Paving is being done from 8 P.M. to 6 A.M., starting in the south tube, with the two lanes of the north tube being used for two-way traffic. The job is expected to take 3 months.

NLRB rulings indicate need for care in firing

Recent decisions of the National Labor Relations Board underscore the need for being careful before discharging an employee on demand of a union. You may be violating the Taft-Hartley Law and it may cost you money.

1. Dinardo, Inc., Pittsburgh builder of bridges, was threatened with a strike by the Pittsburgh local of the AFL iron workers union if it did not fire an outsider, Harold B. Conley, a member of another local of the same union in Cumberland, Md.

Dinardo fired Conley, who later brought charges of unfair labor practice against both the company and the union.

An NLRB trial examiner has found them guilty and recommended that they jointly reimburse Conley for wages lost.

2. Public Service Co. of Colorado and the AFL electrical workers must, under a ruling of another NLRB trial examiner, jointly pay wages lost by an employee who was fired because he refused to pay "support money"—the equivalent of dues—to the union while the union would not admit him to membership. The examiner held that a contract clause which called for the employee's dismissal under these circumstances is illegal.

3. Columbus and Southern Ohio Electric Co., building a plant near Athens, O., employed one Oren Miller as a plasterer. The AFL plasterers' union, unable to supply plasterers, had issued a work permit to Miller. Later, when union plasterers were available, the union demanded, and obtained, Miller's discharge to provide a job for the union member. Miller brought charges against the union.

The case was settled with the union paying Miller $350 in lost wages and agreeing not to cause the company to discriminate further against any employee.

Double swing bridge is first of type

Virginia structure to incorporate two 500-ft. swing spans—Unit prices show trend of bidding

Recent contract awards (ENR Oct. 6, p. 16) mark a major beginning for a unique 3,750-ft. long bridge that will contain double swing spans making up 1,000 ft. of its length.

The bridge will span the York River at Gloucester Point, near Yorktown, Va. Its unusual design was decided upon after local groups interested in preservation of the Revolutionary War battleground at Yorktown had opposed a suspension bridge on the ground that the 200-ft. towers would overshadow war memorials.

To be built by the Virginia State Highway Commission under direction of W. R. Glidden, bridge engineer, and with the New York firm of Parsons, Brinckerhoff, Hall and MacDonald as consultants, the over-water structure will consist of: Two central swing spans, each 500 ft. long; two 390-ft. deck-truss spans adjacent to the swings; and two 350-ft. anchor spans. It will carry a 26-ft. roadway. Minimum clearance when closed will be 60 ft. above water. When opened, the simultaneous-acting swing spans will provide a 450-ft. clear main channel.

First toll-revenue bonds

The bridge is financed by the first toll-revenue bonds to be floated under Virginia's 1940 Revenue Bond Act. Tolls will be removed when bonds are paid off. The successful bond bid amounted to the equivalent of interest of 2.6553 over a 24-year period.

Bids were taken at lump-sum for structural steel for superstructure and substructure. In the accompanying table, quantities shown in parentheses are engineers' estimates. Contractors based bids on their own quantity analyses.

Wage rates prevailing in the area are: Skilled, $1.75 to $2.50; semi-skilled, $1.40 to $1.625; unskilled, $.80. Work on the substructure must be completed 730 days from date of award; on superstructure, 900 days from date of award.

At the bid opening Sept. 1, the high of seven bids was 69 percent above the low on the substructure; the high of four bids on the superstructure was 41 percent over the low. Two alternate bids were submitted on substructure.

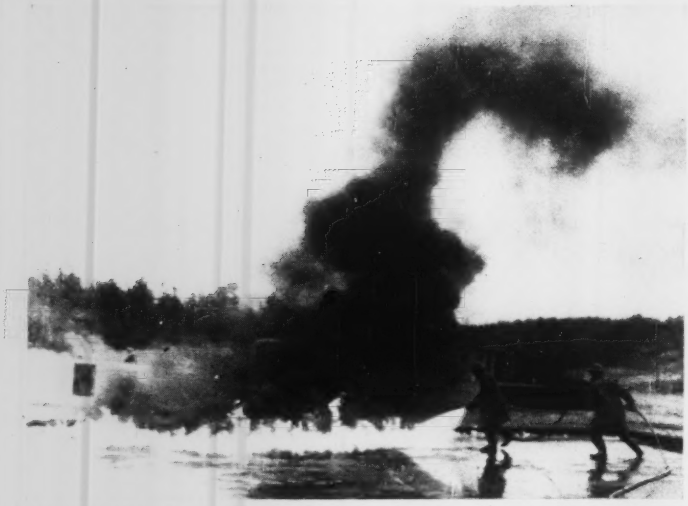
Low and second-low bidders on the two contracts (keyed 1 A and 1 B for reference to the table) were:

Contract 1, Substructure—Massman Construction Co., Kansas City Bridge Co., Kansas City (1 A), $4,690,232; Merritt-Chapman & Scott Corp., New York (1 B), $5,139,190.

Contract 2, Superstructure—Virginia Bridge Co., Roanoke, Va., (2 A), $2,424,711; Harris Structural Steel Co., New York, (2 B), $2,726,734.

Here are unit prices bid by contractors

Items, Contract 1, Substructure	Quantity	Unit prices 1A	1B
Excav., river piers....cy	47,000	$2.00	$3.50
Excav., appr. prs, & so. abut....cy	5,100	10.00	1.70
Excav., str., reloc. & no. abut....cy	780	4.00	2.10
Embank., no. appr....cy	73,184	2.00	1.00
Furn. soil bear. test equip....ls	.....	1,000.00	1,000.00
Soil bear. tests....ea	3	500.00	500.00
Timber piles, untr....lf	15,200	2.00	2.00
Concr. piles, c in pl....lf	3,000	6.25	5.50
Furn. pile load, test equip....ls	.....	500.00	2,000.00
Pile load. tests....ea	5	500.00	1,000.00
Concr. cl. A, in cais, cutting edges, river piers....cy	4,450	20.00	20.00
in cais. tremie seals, riv. piers....cy	4,850	20.00	20.00
in tremie seals, appr. piers....cy	810	20.00	40.00
in cais. riv. prs....cy	24,850	32.00	35.00
in riv. pier shafts....cy	8,680	45.00	65.00
in appr. pier bases and abut. foot....cy	2,020	20.00	50.00
in appr. pier shafts and abut. walls..cy	2,030	45.00	70.00
Reinf. steel....lf	2,445,000	.15	.10
Steel sh. pil. left in pl....lb	237,000	.09	.18
Struct. steel (7,325,000 lb)....ls	.....	1,940,600.00	2,140,970.00
Temp. cofferdams, riv. pier cais., (six, 65,000 sf, 150 ft. ±)....ls	.....	480,000.00	500,000.00
Timb. rub. strip (7.7 Mfbm)....ls	.....	700.00	600.00
Clear. & Grub....ac	8	500.00	500.00
Lumber flumes (1.028 Mfbm)....ls	.....	500.00	500.00
Surf. tr. soil gutter, (2'x2'x1')....sy	380	2.00	1.30
Seeding....ac	1.25	600.00	536.00
Topsoiling, 2"....ac	1.25	1,000.00	736.00
Items, Contract 2, Superstructure	**Quantity**	**2A**	**2B**
Concr. cl. A....cy	2,300	$60.00	$62.25
Reinf. steel....lb	460,000	.11	0.1105
Struct. carb. st. in fix. girder spans (1,860,000 lb)....ls	.....	253,212.00	267,850.00
Struct. carb. st. in fix. truss spans (4,970,000 lb)....ls	.....	795,362.00	976,430.00
Struct. carb. st. & struct. silicon st. in mov. truss spans (3,820,000 lb)....ls	.....	640,677.00	791,763.00
Steel grid flooring....sf	25,500	4.20	3.14
Operating mchy....ls	.....	221,721.00	212,848.00
Houses....ls	.....	37,060.00	43,172.00
Electr. wk., excl. of br. rdwy. light sys....ls	.....	148,625.00	136,544.00
Bridge rdwy. light. sys. (20 fixtures, plus 2 traffic lights)....ls	.....	19,196.00	13,052.00
Warn. gates. 2, & barrier gates, 2....ls	.....	13,158.00	11,000.00



FOUR SECONDS, FOUR GALLONS—that's all it took to put out this high-octane gasoline fire at Fort Belvoir, Va., when the Engineer Research and Development Laboratories wanted to test some low- and high-pressure water-fog extinguishing systems. The high-pressure equipment proved four times as effective as the low-pressure units. It can deliver 35 gal. per minute at 1,500 lb. psi., but it's difficult to handle hose at this pressure. Tests at 1,000 lb. psi. showed extinguishing times averaging only one second longer. Water economy and the fact that it doesn't scatter burning fuel are two prime advantages of water-fog technique.

Canada has new program to promote home ownership

A new housing program of the federal government of Canada has been announced by Reconstruction Minister R. H. Winters. It is designed to promote home ownership in Canada and to provide both low-rental and subsidized rental housing developments.

Minister Winters has visited each of the provinces and discussed the federal government's housing plans with provincial premiers. He said it is likely that the National Housing Act will be amended to provide loans for home owning which will cut in half the necessary down payments on low priced homes. Later changes will provide for housing cooperatives.

A federal-provincial partnership on a 75-25 per cent financial basis would make possible a program of land assembly, construction of houses for sale and for rental. The provinces would arrange for the land and the services and would receive municipal requests for aid. Ottawa would design and construct the projects, management being a joint federal-provincial venture. Municipalities in lieu of taxes on such projects would get an amount equivalent to ordinary tax revenues. They could also share in the provincial share of 25 per cent of the cost of the undertaking. Minister Winters estimated that 100,000 new houses would be built in Canada this year to meet current demands but that this will have no effect on the existing backlog of housing needs.

Contract letting starts N. C.'s big road program

North Carolina's $200,000,000 secondary road construction program got under way on Sept. 29 when 190 miles of road work under the bond program was let to contractors.

Contractors, in opposing the state's purchase of $5,000,000 worth of highway equipment from bond money, had expressed a fear that the state intended to go into the road building business at the expense of private contractors. (ENR Aug. 25, page 10). The first letting involved 29 projects.

Chairman H. W. Jordan on Sept. 16 signed the first requests for bond-money allotments for seven of the state's 10 highway divisions, and included in the request were orders for about 430,000 tons of crushed stone for the commission's planned road stabilization program in the western half of the state where engineers intend to concentrate on stabilization this winter and to begin construction next spring.

Reclamation contract for Duchesne Tunnel

The Reclamation Bureau, after a month-long delay, has awarded a contract for completion of the Duchesne Tunnel portion of Utah's Provo River Project to the Los Angeles firm of Grafe-Callahan Construction Co. and Rhodes Bros. and Shofner on a low bid of $4,379,961. The low bid was nearly $1,500,000 below the best offer submitted a year ago, when Reclamation rejected all bids as too high.

Seven bids were received for the present job, the highest being $5,499,318. Questions as to the length of a relining job in the portion of tunnel bored prior to the war reportedly held up acceptance of bids for a time.

The award to Grafe-Callahan covers excavation of the 3.7 miles of the 6-mile tunnel remaining to be bored, concrete lining of 20,000 ft. of tunnel, plus construction of a diversion dam and works on the north fork of the Duchesne River, source of the water which will eventually feed through the tunnel into the Provo River.

The project calls for bringing waters of the Duchesne through the Wasatch Mountains, feeding into the Provo River, and eventually to Salt Lake Valley via the Salt Lake Aqueduct project, which is now nearing completion. Upward of 30,000 acre ft. of water now flowing into Deer Creek Reservoir will flow through the tunnel annually, with the remainder of water for the project to be diverted from the Weber River.

With letting of the new contract, all major unfinished units of the whole Provo River Project are now under contract or bid for, with the exception of a minor lining job and a Salt Lake Terminal Reservoir on which bids will be called shortly.

Completion of the remaining unfinished portion of the Salt Lake Aqueduct, a 5-mi. sector in Provo Canyon, is due in August, 1950. A 7-mi. sector of the same Aqueduct in Salt Lake County is due for completion in December of this year.

Grafe-Callahan has contracted to complete the Duchesne Tunnel in 1,200 days. However, although the tunnel will not be ready as the final link in the overall job for some three years, Salt Lake City and neighboring communities will be enabled to utilize available Provo River water in 1950 in the event of emergency shortage due to completion of the Aqueduct. When the Deer Creek-Duchesne water is available, engineers believe the Salt Lake valley will have sufficient water supplies to meet all growth needs for two decades.

Mexico may exclude foreign engineers

A "professionalists' law" is likely to pass the federal legislation of Mexico at its current session, according to informed sources in the Mexican capital. This proposed law, based on constitutional Article 4, demands that only Mexicans by birth practice any profession in Mexico.

The measure provoked a stir when it was first announced in 1943. Since then the matter has been dormant. The measure has been scheduled for congressional hearing several times, but each time it has been deferred until the next session because of the pressure of more urgent business.

In 1909 a law was enacted and is still strictly enforced which demands that all enterprises in Mexico that have the legal status of "company" see that at least 90 percent of their employes are Mexicans. The current measure is also related to the amended migration law, enacted five years ago, which bans from residence in Mexico all foreigners who must work for pay, other than those who can make substantial investments, preferably in agriculture and allied fields, and commerce and industry that are Mexican-controlled. The only exceptions are technicians (who must pledge that they come to teach Mexicans, after which they must quit the country) employees of governments, very specialized salesmen and entertainers. All these can stay in Mexico only briefly. Any other visitor who tries to work for money is liable to deportation on the spot when apprehended.

"Professionalists' law" sponsors contend that Mexico has abundant Mexican civil engineers and other professionalists to attend to national needs. They cite numerous graduates from engineering and other professional schools.

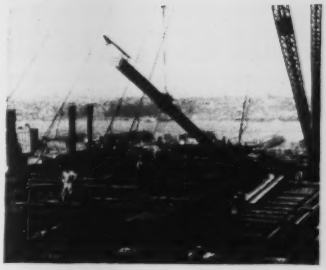
If this proposed "Mexico for Mexican Professionalists" is enacted and enforced it will affect a number of U. S. engineers who are now engaged on various projects in that country, and it is thought that a precedent would be established which might restrict the work of our engineers in other countries, particularly in Latin America.

Concrete cooling started at Hungry Horse Dam

The tremendous job of cooling the 2,900,000 cu. yd. of concrete to be used in the Bureau of Reclamation's Hungry Horse Dam in Montana has been started with installation of the first 1,200 ft. of cooling pipe in the base of the dam.

Approximately 1,000 miles of thin-wall steel tubing will be embedded in the 564-ft. high dam during construction to complete the big cooling job. Heat to be removed from the world's fourth largest and third highest concrete dam will equal that liberated burning about 5,500 tons of coal.

FOUR NEW LANES were opened for westbound truck traffic last month on the San Francisco-Oakland bay bridge approach. New toll gates—intended to speed up bottle-necked traffic—are on 750,000 cu. yd. of hydraulic fill; the total cost of the improvement was in the neighborhood of $1,000,000.



STRUCTURAL STEEL WORK on the new home office of the Mutual Life Insurance Co. of New York on Broadway between 55th and 56th Streets, New York City, was "topped out" last week, a little more than three months after the first steel column was put in place on June 8. The 376-ft.-high building will have a total of 390,000 sq. ft. of office space. Mutual Life will occupy about 65 percent of the space. Shreve, Lamb and Harmon Associates designed the building. Edwards & Hjorth are the structural engineers, and Turner Construction Co. organization is the builder.

Injunction sought in N. C. road machinery case

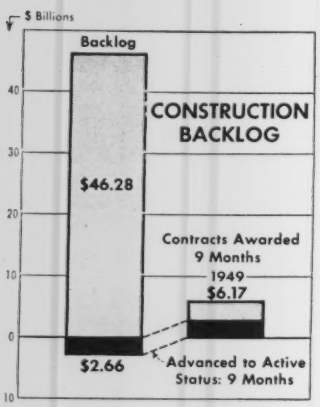
A test suit asking for an injunction restraining the North Carolina Highway and Public Works Commission from spending any of the proceeds from the state's $200 million rural road bond issue for the purchase of road building machinery was filed in Wake County Superior Court at Raleigh Sept. 29. Nello L. Teer, Durham, N. C., contractor and road builder filed the suit. Judge Henry A. Grady signed an order directing members of the commission to appear at a hearing in Raleigh Oct. 14 and show cause why the restraining order should not be issued.

The suit against the machinery purchase was filed on the Highway Commission as it was holding a meeting in Raleigh. It evoked a comment from Commissioner George Coble that it is "poor strategy for a business to sue its best customer." The suit has been hinted at by road builders since the Highway Commission ignored a protest of the Carolinas Road Builders Association and the General Contractors of America (ENR Sept. 15, p. 26).

The commission was meeting to act on the first contracts in connection with the $200,000,000 North Carolina roads program.

It awarded contracts to private contractors on five projects connected with the roads program, but held up action on five others.

CONSTRUCTION BUSINESS



Construction backlog tops $46 billions

The backlog of heavy engineering construction projects in the planning stage increased by $536,269,000 during the month of September, according to a continuous inventory of construction work maintained by ENGINEERING NEWS-RECORD. This tops all but January's $585,535,000 increase, for a 1949 near high. Total backlog now stands at $46,281,408,000 of work proposed, but not yet advanced to the contract stage.

Private construction's backlog increased $263,786,000 during the month to $14,613,693,000, roughly a two percent rise. The major part of this boost came from the commercial building backlog which was upped $168,319,000, or about three percent, and the backlog of private unclassified construction work which jumped $110,675,000, or about 2½ percent. The industrial building reserve shrank by $15,277,000 in September, as more projects advanced to active contract status than were replaced by new proposed projects. Private bridge-building plans had $69,000 added to their total during the month.

Public construction reserves, now $31,667,715,000, increased by $272,483,000 in September, only slightly more than the private increase, by dollar volume. The public building backlog went up $281,253,000, which is more than the net increase for all types of public work. Highway contract awards outweighed planning, on the other hand, resulting in a net $24,430,000 reduction in the highway backlog. Other classifications with reduced backlogs as a result of the month's contract awards are earthwork and drainage, down $585,000; sewerage construction down $7,879,000; and waterworks, down $2,748,000. Public bridge planning which topped awards by $21,769,000, and public unclassified construction planning of $5,103,000 in excess of awards, added to the month's backlog increase.

The Middle West's construction reserve went up the most, dollarwise, during September, with a $213,560,000 increase. As a percent of the total, however, this rise is the smallest for any region, less than ¼ percent. The South's backlog went up $173,413,000, or more than 3½ percent of that region's August heavy construction reserve. The New England backlog is up $74,056,000, or 3 percent; the Middle Atlantic states' backlog is up $179,906,000 or 1½ percent; in the region west of the Mississippi the rise of $72,121,000 is roughly ½ percent; and in the Far West a $15,417,000 increase is just under 2 percent.

Construction Backlog (September 1949)

Waterworks	$1,209,737,000
Sewerage	2,145,296,000
Bridges	1,522,589,000
Earthwork & drainage	7,525,072,000
Highways	4,409,533,000
Buildings:	
Public	10,236,157,000
Industrial	4,413,630,000
Commercial	5,569,806,000
Pvt. uncl.	4,580,950,000
Pub. uncl.	4,669,538,000
Total	**$46,281,408,000**

Costs continue slow rise

ENGINEERING NEWS-RECORD's Construction Cost Index for October is 480.4, 1913 = 100. This is 0.2 point above the previous peak in October 1948. Lumber price hikes during the past 30 days pushed the index over the top, increasing from $78.34 to nearly $80.00 per M b. ft. as measured by the ENR 20-cities average for pine and fir 2x4's. Common labor costs on the other hand, are stable this month, as the fourth round loses its momentum.

The ENR Building Cost Index goes up for October due both to the lumber increase and a rise in the 20-cities average for skilled labor. At 353.5 the index is one percent below October 1948, however. Skilled labor rates are up to $2.467 from last month's $2.454, for the 20-cities average.

The ENR Material Costs Component is up for the first time since August 1948, when the first break came in lumber prices. At its peak the materials index was 198.31, from which it dropped to 184.18 in a 14-month decline. This month it is up to 184.83, notwithstanding another one-cent drop in the 20-cities average price of bulk cement. Cement prices hit the top in May of this year at $2.99 per bbl. and since then have eased down to $2.94, approximately the level of September 1948.

Cement shipments up 14%

August shipments of portland cement were 14 percent above a year ago at 23,633,000 bbl. reports the U. S. Bureau of Mines, while production during the month of 18,715,000 bbl. of finished cement represents a one percent decrease compared with last year. Demand for cement increased 22 percent from July to August, measured by higher August shipments in that amount. Clinker output in August 1949 amounted to 18,362,000 bbl., a decrease of one percent compared with a year ago. Stocks of 14,395,000 bbl. of finished cement at the end of the month were 72 percent above the August 1948 figure, while clinker stocks of 5,877,000 bbl. are 50 percent higher.

Highway costs cut 25-35%

Construction unit costs for most items connected with Minnesota's highway maintenance program are 25 to 35 percent lower than they were during the war peak, reports C. L. Motl, Maintenance Engineer. Minnesota has successfully carried out a program of "contract" construction, to which Mr. Motl attributes much of the saving in unit costs. The Minnesota State Highway Department does no construction work with state-owned equipment, and only a limited amount of heavy maintenance work with state equipment.

Bids on housing notes

The Public Housing Administration Housing and Home Finance Agency has summarized plans for the sale of $99,961,000 short term notes by 52 local housing authorities throughout the country. Of the grand total, $33,080,000 will be sold October 13, $38,000,000 November 3, and the remaining $28,881,000 November 18. Los Angeles is to get the biggest chunk of the borrowings, $13,777,000 for its City Authority, $5,600,000 for its County Housing Authority. Detroit is second with $15,175,000, and Washington gets $5,758,000.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 81, went to press.)

Water Supply—Washington Suburban Sanitary Commission, Hyattsville, Md., plans $10,000,000 water facilities expansion program, in Prince George and Montgomery Counties, Maryland, including 6 mg dam and reservoir in Patuxent River, near Laurel, $3,573,000; and a pipeline from Willis School to Wheaton Reservoir $1,525,000. Harry Hall is chief engineer for the Commission.

Mercantile Building—Tellepsen Construction Co., Houston, Tex., has been awarded contract to build mercantile building for Sakowitz Brothers, Houston, at about $7,000,000. Alfred C. Finn, Houston, is architect and Robert J. Cummins, Houston, is engineer.

Steam Generating Plant—Foundation Company of Ontario, Ltd., Toronto, Ont., will construct superstructure of steam generating plant at Toronto, for Hydro Electric Commission of Canada; the total cost of project is $40,000,000.

Airport—City of San Francisco and San Francisco County will vote Nov. 8 on $10,000,000 bonds for improving airport. W. P. Day & Associates, San Francisco, have plans underway. Public Utilities Commission, City Hall, is in charge of project.

Hospital—U. S. Engineers, Boston, Mass., will open bids Jan. 4 for Veterans Hospital at West Haven, Conn., to cost $14,000,000 to $16,000,000.

Supreme Court—Department of Public Works, City of New York, plans 1 story penthouse, supreme court building in Brooklyn to cost $10,000,000 to $12,000,000. Shreve, Lamb & Harmon, New York, N. Y., are architects.

Bridge—John F. Casey & Co., Pittsburgh, Pa., was awarded contract at $3,765,475 to construct bridge in Kensington, Westmoreland and Allegheny Counties, Pa., for the Pennsylvania State Highway Department, Harrisburg.

Cathedral—Catholic Archdiocese of Baltimore, Md., plans constructing cathedral to cost $8,000,000. Architect has not been announced.

Hospital—J. L. Simmons Co., Inc., Chicago, Ill., will construct Veterans Hospital, in Chicago, for the Veterans Administration, Washington, D. C., at $6,985,905.

Garage—New York Life Insurance Co., New York, N. Y plans 2-story garage, to cost $4,000,000, with roof landscaped to serve as a park.

Bond Election—City of Cleveland, O., will hold election Nov. 8 to vote $1,000,000 for maintenance and storage building; $2,000,000 for intercepting and relief sewers; $5,500,000 for improving airport; $2,000,000 for fire stations, supreme court building, etc., and $1,500,000 for improving parks.

Earthwork for Boulder Project—R. V. Lloyd & Co., Indio, Calif., has been awarded contract for earthwork, pipeline and structures, and reconstruction Main Canal, Coachella Valley Distribution System, Boulder Canyon Project, Arizona and California, by the Bureau of Reclamation, Denver, Colo., $2,070,090.

Benson Sewer—City of Omaha, Neb., received low bid from Santuccia Construction Co., Skokie, Ill., to construct Benson Sewer. The low bid was $1,062,355. E. W. Woodbridge is city engineer and William Provazik is city sanitary engineer.

Petroleum Storage and Plant—J. D. Streett & Co., St. Louis, Mo., plans petroleum storage and plant in St. Louis County to cost about $1,000,000.

Hospital—R. P. Farnsworth & Co., New Orleans, La., has been awarded contract for eight 1-story buildings at Southeast Louisiana State Hospital, by State Division Administration, Baton Rouge, at $2,570,000. Wogan, Bernard & De La Verne, New Orleans, are architects. Alvin Tromhertz, New Orleans, is engineer.

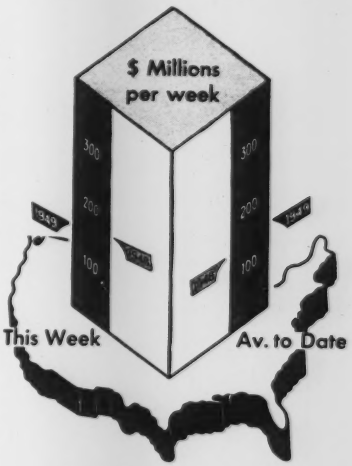
Mental Hospital—O. W. Burke Co., Detroit, Mich., was low bidder at $2,362,500 for constructing Mental Hospital at Northville, Mich., when Michigan Department of Administration, Lansing, opened bids. Odell-Hewlett & Luckenback, Detroit, are architects. E. R. Little, Detroit, is engineer.

Flood-Protection Works—U. S. Engineers, Washington, D. C., received low bids for pressure conduits and sewers for local flood control protection, Cumberland, Md., and Ridgley, W. Va., from George & Lynch, Wilmington, Del., at $1,734,703.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Oct. '49	480.43	230.94
Building Cost	Oct. '49	353.52	191.10
Volume	Sept. '49	291	128



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Oct. 13 1949	Cumulative 1949 (41 wks.)	Cumulative 1948 (42 wks.)	% chge av.wk.
Federal	$17.4	$858.1	$788.9	+11
State & Mun.	60.0	2,555.1	2,119.3	+24
Total Public	$77.4	$3,413.2	$2,908.2	+20
Total Private	66.3	3,054.0	2,708.5	+16
U. S. Total	**$143.7**	**$3,467.2**	**$5,616.7**	**+18**

Contracts by type of work

	This Week	Cumulative 1949 (41 wks.)	Cumulative 1948 (42 wks.)	% chge av.wk.
Waterworks	$1.5	$168.5	$166.5	+4
Sewerage	4.4	207.0	177.5	+19
Bridges	12.9	279.8	229.7	+25
Highways	12.5	754.9	838.8	−8
Earthwork, Waterways	7.0	439.1	425.0	+6
Buildings, Public	40.3	1,316.6	891.1	+51
Industrial	16.2	824.9	858.4	−2
Commercial	36.7	1,875.6	1,502.5	+28
Unclassified	12.0	600.8	527.2	+17

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (41 wks.)	Cumulative 1948 (42 wks.)	% chge av.wk.
NON-FEDERAL	$4,671.5	$3,720.2	+29
Corporate Securities	1,897.8	1,744.6	+11
State and Municipal	2,388.7	1,483.3	+65
U. S. Building Loan	....	65.0	...
Federal-Aid Highway	385.0	427.3	−8
Federal	621.8	1,558.9	−59
Total Capital	**$5,293.3**	**$5,279.1**	**+3**

AS STEEL WAS TOPPED OUT for a new 36-story office building in New York City, brick raced up after it, aluminum spandrels were bolted on and aluminum windows installed. Inside, floor concreting kept up the fast pace.

ELEVATOR MACHINERY is lined up for hoisting to upper floors.

Skyscraper

WITH RECORD-BREAKING SPEED, a 36-story office building is being erected in a busy, congested section of New York City.

Excavation started Dec. 1, 1948. Steel erection began the following March—while excavation was still in progress—and was finished in slightly less than five months. Completion of the building is expected next December, four months ahead of schedule.

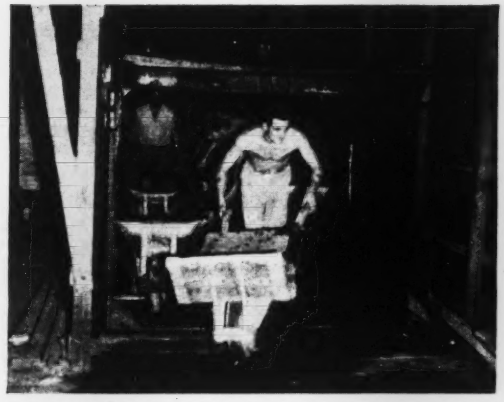
The rapidity with which the building went up is attributed to thorough advance planning of every detail of the construction operations, strict adherence to the time schedule, coordination of trades, and the cooperation of owners, architects, engineers, building materials manufacturers, subcontractors and labor.

Architectural features

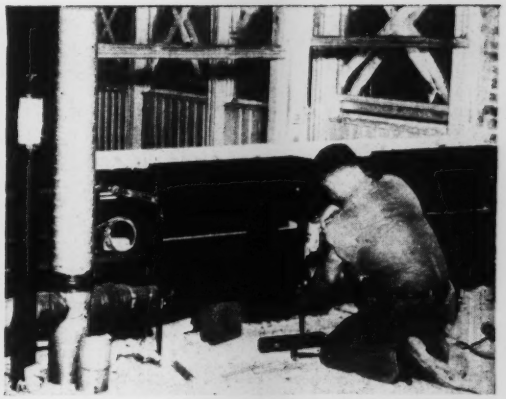
The new skyscraper is known as 100 Park Avenue. Located only one block from Grand Central Terminal, in the heart of New York's uptown business district, it extends for a distance of 198 ft. along Park Avenue, between 40th and 41st Streets, fronting 230 ft. on 40th St., and 147 ft. on 41st St. It will contain 10,200,000 cu. ft. of space and more than 800,000 sq. ft. of floor area, of which 660,000 sq. ft. will be rentable. Cost is estimated at $20,000,000.

(To make way for this structure, the famous Murray Hill Hotel—8 stories of granite, brownstone and brick—was torn down.)

In plan, the lower portion of the



THE MASON'S HOIST hardly stopped before the men dashed on, removed empty barrows, rushed on full ones.



AIR CONDITIONING UNITS fed by a high-pressure system were installed under the double-hung aluminum windows.

Rushed to Completion by Good Scheduling

new building is L-shaped. Setbacks are located at the 9th, 11th, 14th, 15th, 17th and 21st floors, and a 70x130-ft. rectangular tower, set back about 30 ft. from Park Avenue, extends from the 22nd to 36th floor. The top of the building is 500 ft. above street level at the middle of the Park Ave. frontage.

The exterior base of the structure is polished granite. Marble facing is used up to the second-story window sill and white-faced brick and aluminum spandrels above. Facings are backed up with brick coated on the interior with a bituminous waterproofing to prevent water vapor from entering the wall and condensing and freezing in cold weather.

Double-hung aluminum windows run from column to column, closely spaced for flexibility in arranging office partitions and to admit as much daylight as possible. Tenants will choose the types of lamps and fixtures to be installed for artificial lighting.

The building has a structural steel frame, with columns 17 to 26 ft. apart. Floors consist of a structural slab of mesh-reinforced concrete 4 in. thick made with a grit aggregate and expanded by adding an aluminum powder to the mix. They are topped with a 2½-in. cinder-concrete fill and a 1-in. cement-mortar finish.

The lobby, with entrances on Park Avenue and 41st St., will be finished with polished travertine walls, terrazzo floors, bronze trim, and ceilings made of aluminum, bronze, glass mosaic and plaster. Elevator corridors in the stories above will have terrazzo floors and marble wainscots. Toilets have ceramic tile floors, tiled walls to ceiling, and black structural glass stalls. Hollow metal doors are used throughout.

Rapid vertical transportation will be provided by two service elevators and 18 high-speed passenger elevators equipped with electronic signals and controls.

A truck driveway into the building on the 40th St. side with a large loading platform, and a freight elevator to the basement, will eliminate street pedestrian and vehicular congestion. From the basement, shipments will be routed to the service elevators for delivery to their destinations.

Conditioning varies to meet needs

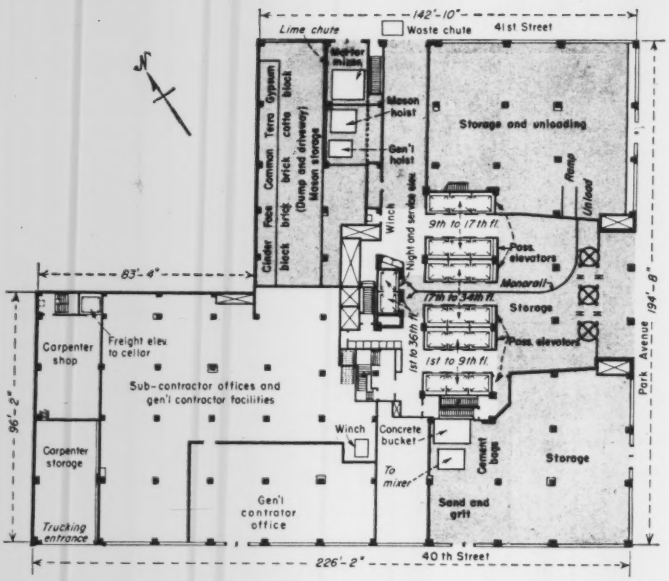
The building will be conditioned throughout the year—by cooling and dehumidifying in summer, heating in winter, and ventilating at all seasons. Inner and outer spaces of each floor are separately zoned. This enables conditioning to be varied at any part of any floor as it is affected by changing heat from sun or wind or loss through windows and walls.

The outer zones, or areas adjacent to the windows and extending inward for 15 ft., are served by a high-pressure system that eliminates the need for large air ducts around the periphery of the building. Make-up air is distributed through small-diameter vertical riser pipes. Paralleling them are a set of supply and return pipes through which pumps and heat exchangers will circulate cold water in summer and warm water in winter to supply additional cooling or heating as needed. Under each window is a unit that automatically mixes, tempers and redistributes outdoor air and recirculated air from the room. Since each unit has individual controls, partitions may be placed wherever desired and each subdivision will be provided with proper ventilation and air conditioning.

The interior zone systems draw air from corridors or open spaces and mix it in a fan room with a proper proportion of outdoor air. Properly filtered and cooled or warmed, the mixture is then distributed by main fans through ducts to strategically located outlets.

A separate small fan room handles the air for every two or three floors up to the 20th, while a single primary fan room with local mixing units on each floor serves the tower offices. Washrooms will be ventilated with a mechanical exhaust system. Air conditioning of store spaces in the ground floor and basement areas will be provided by the tenants entirely independent of the main system and will make possible the operation of such spaces during hours when the office areas are unoccupied.

Steam supplied by the New York Steam Co. will be used in winter for heating and in summer for driving the centrifugal compressors to chill the water for the air-conditioning system.



THE STREET FLOOR was used to receive materials and equipmeat and for contractors' offices and facilities. Trucks entered from 40th and 41st St.

Maximum steam for winter heating and ventilating is estimated at 1,500 boiler horsepower and about two-thirds as much is expected to be used in the hottest summer weather to operate the 2,000-ton refrigerating plant.

Planning of the construction operations was strongly influenced by lack of storage space near the site, heavy traffic conditions on adjoining streets, and the large quantities of mechanical equipment that went into the structure, especially for the air-conditioning system. Material deliveries had to be timed so that materials would be available when needed and yet not have to be stored for any appreciable length of time.

Architects and engineers were requested to have their designs completed well in advance to allow time for fabrication and delivery of materials. Some materials, like the terrazzo marble chips that came from Italy, had to be shipped over long distances, and these had to be ordered well ahead. To assure delivery on time, expediters were sent to the plants of various materials manufacturers.

Strict adherence to the schedule paid off. On Feb. 20, with excavation still in progress in some areas of the site, the steel erectors began setting bearing plates and grillages. On March 1, erection of column steel commenced, the general excavation being practically completed.

Steel was fabricated at Bethlehem, Pa., and shipped by railroad to piers at Jersey City, N. J. Because of the lack of storage space at the site, steel was held at this point until needed. When the erection crew was ready, the structural members were loaded on barges for towing across the East River and then trucked to the site.

The steel was erected with five derricks, each of which were equipped with a 100-ft. mast and 90-ft. boom and operated by a two-drum gasoline-powered hoist. At the height of the job, eight four-man riveting crews were employed.

Concreting keeps up with steel

Within a month of the start of steel erection, casting of the concrete floors began. Concreting kept pace with the steelwork and at all times was well within the distance limit (8 stories below steel being erected) prescribed by the state labor code.

A concrete batching plant was set up in the basement on the 40th St. side. Trucks carrying sand and grit backed directly into the building at street level and dumped into a hopper feeding the mixer. Cement bags were also unloaded at the street floor level and fed as needed.

Concrete was discharged by the mixer into a 1¼-cu. yd. bucket and raised on a hoist to the floor under construction. There it was transferred to a hopper, which in turn fed manually operated rubber-tired buggies that transported it to the forms.

As soon as the concrete for each floor had hardened, materials to be used on each level could be brought in and stored there.

Material deliveries timed

On the street floor, one corner of of the building was devoted to offices, shops and various facilities for the general contractor and subcontractors. The remainder of the floor was used for driveways for trucks unloading supplies and for short-time storage. For protection against damage, the concrete floor was covered with two layers of 1-in. plank.

The northeast corner of the building was assigned to mason storage. The mortar mixer was installed in the basement near 41st. St. and a mason hoist was provided near it. A hoist for general use was placed next to the mason hoist.

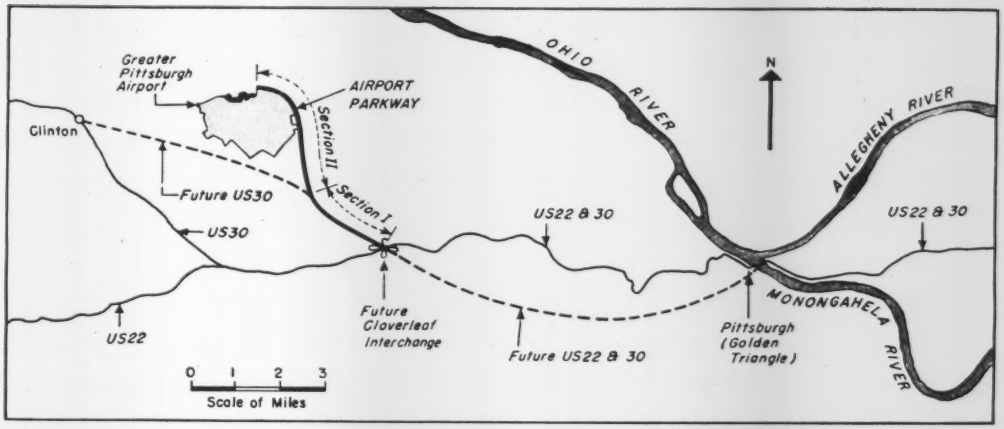
Until the elevators could be installed, these and the concrete-bucket hoist were the only lifts available for raising materials to the upper floors. Hence, the time available for the use of the hoist had to be carefully apportioned to the various trades. The subcontractors were told in advance when to bring the materials onto the street floor, when they could use the hoists and for how long. Once set up, the timetable was strictly adhered to.

Elevator equipment was brought in from the 41st St. side and unloaded at a point where a monorail could pick it up for delivery to the service elevator shafts. From there, the equipment was hoisted through one of the elevator shafts to the floor on which it was to be located.

Later, passenger elevators were installed to the 9th floor, and then to the 17th floor, and one of each of these was also used for lifting materials. A high-rise elevator followed and was used for delivering materials to the uppermost floors.

A waste chute was installed on the exterior of the structure on the 41st St. side.

The building is being constructed for 100 Park Avenue, Inc. Kahn & Jacobs are the architects. Jaros, Baum & Bolles, consulting mechanical engineer, designed the air-condition system. The George A. Fuller Co. is general contractor, with James F. Murphy as project manager. Steel was erected by the Bethlehem Steel Co. and concrete floors were placed by the Rizzi Construction Co.



CONNECTION between the airport and existing U. S. highways 22 and 30 will be first step. Later, both highways will be relocated to give a direct route to downtown Pittsburgh.

Allegheny County's New Airport Parkway

AFTER NEARLY TWO YEARS of heavy grading involving deep cuts and high embankments, the Allegheny County (Pa.) Greater Pittsburgh Airport Parkway is nearing completion.

One 2.9-mi. section of the parkway is virtually completed, and paving will start soon on the remaining 2.5-mi. section. The entire project is scheduled to be completed this year.

Much of the excavation was in tough rock, and the presence of many springs and seepage waters from abandoned coal mines required extra precautions to insure adequate drainage.

As shown on the accompanying map, the parkway will form a connecting link between U. S. Highways 20 and 30, and the new airport located about 14½ mi. northwest of the Golden Triangle.

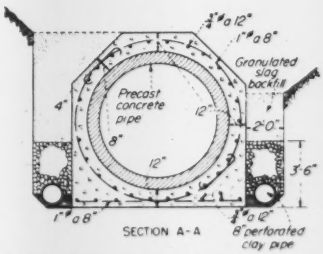
The 5.4-mi. stretch of parkway, costing roughly $5,000,000, is being built by two departments of Allegheny County—the Department of Works, and the Department of Aviation.

Section I of the parkway beginning at U. S. Highways 22 and 30 and extending 2.5 mi. to Dinner Bell Inn is being built by the Department of Works. The Department of Aviation is building Section II which is 2.9 mi. long, beginning at the Inn and running to the airport.

Designs are being prepared by the Pennsylvania Department of Highways for extending the Penn-Lincoln Parkway (west) from downtown Pittsburgh to a full cloverleaf connection with the new airport parkway at U. S. Highways 22 and 30.

This western extension of the Penn-Lincoln Parkway will start in the Golden Triangle, cross the Monongahela River on a new bridge, pass under Mt. Washington in about 1,500 ft. of tunnel and swing northwest to join Campbells Run Road and continue to the cloverleaf connection with the parkway. This will form a high-speed expressway direct from the airport to downtown Pittsburgh.

At the proposed cloverleaf interchange, it is planned to divert U. S. 30 onto the airport parkway for a distance of about 2¼ mi., then swing it northwest, on new location, to rejoin existing U. S. 30 at Clinton, Pa.



CULVERTS under high embankments are precast reinforced concrete pipe, enclosed in heavily reinforced concrete shells and flanked with 8-in. perforated clay pipe for drainage of seepage water.

Six lanes ultimately

The parkway is being built as a four-lane divided highway, with provisions for increasing it to six lanes when warranted by increased traffic. A traffic interchange is being constructed about midway of Section I to connect with the heavily used Cliff Mine-Coraopolis road.

Right-of-way width is 120 ft. and embankments are built to an 80-ft. crown. Cuts are the same width except where they are widened to secure additional borrow material to eliminate long hauls.

Both sections of the parkway are similar in design except for the height of the 4-ft. reflector-type concrete median that will separate the two 25-ft. unreinforced 10-in. concrete pavements.

The Department of Works is using a mountable median strip, 4-in. high in Section I of the parkway, while the Department of Aviation uses a non-mountable 9-in. divisor in its section. Both median designs incorporate a 1-in. top layer of white concrete, corrugated to reflect headlight beams.

A 13-ft. gravel shoulder will be maintained along each roadway pavement of the four-lane highway. Grades are limited to a maximum of 5 percent, and the sharpest curve, except at

interchanges, is being held to 4 deg.

Rugged and mountainous terrain traversed by the parkway necessitated heavy grading and a great deal of rock excavation. For example, there was over 1,000,000 cu.yd. of excavation in Section I.

Deepest cut was 82 ft., involving 375,000 cu.yd. of excavation, of which over 200,000 cu.yd. was rock. Length of haul from this cut averaged approximately 6,000 ft.

The rock was drilled with 12-ft. holes, spaced about 5 ft. each way, loaded with 20 sticks of 60-percent strength dynamite. The charges were wired in series and fired in groups ranging up to 275 holes.

Since a large part of the excavation was rock, varying from a hard to a decomposed shale, it was incorporated in the embankment.

Embankments were built up in 8-in. layers and compacted with both sheepsfoot and smooth-wheel rollers. Rock was reduced to 6-in. maximum size—by a crane-operated frostball working on top of the embankment—before being incorporated in the needed fills.

Most of the heavy excavation was loaded by power shovels. It was hauled by both wheel tractors and bottom dump wagons, and by end-dump trucks. Earth-carrying scrapers handled the lighter material.

Special drainage structures

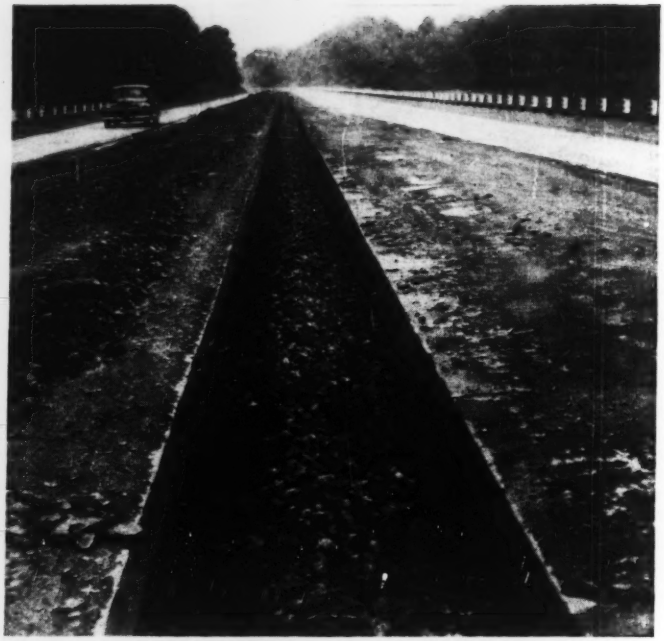
Roadway embankments necessarily were big, ranging up to 110 ft. in height. Specially designed reinforced concrete pipe drainage structures were needed under the fills to carry the heavy superimposed load of the densely compacted rock, disintegrated shale and earth.

Five of the 27 culverts installed for cross-drainage under embankments in Section I of the parkway are of such design. They are in reality two separate pipes one of which encases the other.

The inner pipe is a precast tongue-and-groove reinforced concrete pipe. It is completely enclosed in a second pipe, cast-in-place. This outer pipe has a heavily reinforced 12-in. wall, with a heavy mat of steel in the flat base of the composite culvert.

Underdrains of 12-in. perforated clay pipe were installed in slag-filled trenches adjacent to each side of the drainage structures. These underdrains are for the sole purpose of carrying off any seepage water from the superimposed embankment.

Drainage from springs and seepage water from abandoned coal mines was a serious problem in Section I. Over 6,000 ft. of reinforced concrete pipe



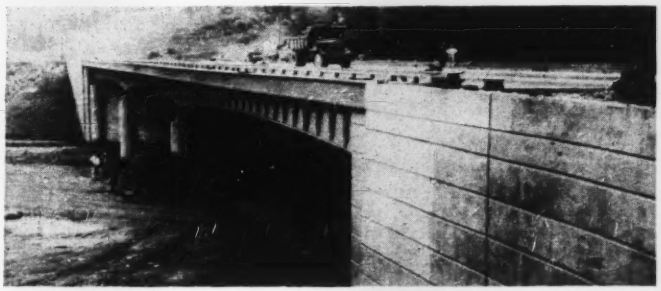
PAVEMENT of two 25-ft. wide strips will be separated by 4-ft. raised median strip, to be inserted in slot left during construction.

CONTRACTS ON THE GREATER PITTSBURGH AIRPORT PARKWAY

Type of Work	Contractor	Contract Awarded	Completion Date	Contract Price
SECTION I (2.5 mi.)				
Drainage Structures and Grading*	Latrobe Road Construction, Inc., Latrobe, Pa.	Feb. 1948	Aug. 1949	$1,215,000
Bridges	Sanctis Construction, Inc., Pittsburgh, Pa.	Oct. 1947	Aug. 1949	888,000
Paving	Dinardo, Inc., Pittsburgh, Pa.	Mar. 1949	Nov. 1949	873,500
Bridge Handrailing	Fort Pitt Malleable Iron Co., Pittsburgh, Pa.	Oct. 1948	Sept. 1949	20,700
Bridge and Interchange Lighting	Devlin Electric Construction Co., Pittsburgh, Pa.	Oct. 1948	1950	57,600
		Total for Section I:		$3,054,800
SECTION II (2.9 mi.)				
Grading, Drainage Structures, and Paving 2.4 mi.	Harrison Construction Co., Pittsburgh, Pa., and Frank Mashuda Co., Milwaukee, Wis.—joint venturers.	Apr. 1947	Aug. 1949	$990,000
Paving (0.5 mi.)	Dinardo, Inc.	July 1949	Nov. 1949	180,000
		Total for Section II:		$1,170,000
Cost of Right-of-Way and Damages: Section I, $150,000; Section II, $60,000				210,000
Total Project Cost (Exclusive of engineering and contingencies)				$4,434,800

* Grading subcontracted by Harrison Construction Co.

ROCK CUTS require close drilling with wagon drills, heavy blasting, loading by power shovels and haulage by dump trucks.



BRIDGE over Montour Run is designed for six traffic lanes. It contains three 100-ft. continuous deck girder spans, skewed 22 deg.

was used, ranging in size from 15 to 72 in.; 5,000 ft. of 8- to 36-in. vitrified clay pipe; and 17,000 ft. of 6- to 12-in. perforated vitrified clay pipe underdrains.

Drainage of the subgrade, where needed, is furnished by a line of 6-in. perforated, vitrified clay pipe running along each side of the median strip directly under the curbing. These longitudinal lines empty into 15-in. cross-drains.

Some inlets on the high side of the roadway discharge into 15-in. clay pipe which, in turn, empty into drains placed beneath the dividing strip. These center drains discharge into culverts through manholes, some of which are 35 ft. deep.

Six-lane bridges

There are three bridges in Section I of the parkway. One carries a single-track railroad over a relocated stream and the other two are parkway stream crossings.

Both of the latter are 80 ft. wide between curbs. The one over Montour Run is made up of three 100-ft. continuous steel deck girder spans, skewed 22 deg. It carries six traffic lanes with a 4-ft. median, one 8-ft. sidewalk and a 2-ft. emergency walkway.

Section I of the airport parkway was designed, and is being built, under the direction of Levi Bird Duff, director, Allegheny County Department of Works.

Design plans and specifications for the three bridges, however, were prepared by Parsons, Brinckerhoff, Hall and MacDonald, consulting engineers, New York City.

C. F. Houlihan is chief engineer of the Department of Works; J. W. Carlson, assistant chief engineer in charge of construction; S. M. Madancy, road design engineer; Ernest Tessitor, bridge design engineer and H. G. Appel, design engineer (specifications). A. Y. Godfrey is resident construction supervisor on the road work, and Joseph Weixel was resident construction supervisor on the bridges.

Design and construction of Section II of the parkway is under the supervision of John B. Sweeney, director, Allegheny County Department of Aviation.

E. G. Messner is the chief engineer; Robert Proctor, construction engineer; and H. P. McKown, resident engineer. Both directors report to the Allegheny County Board of Commissioners, comprised of John J. Kane, chairman, Harry Fowler and Ernest Hillman.

APWA Reports Increased Expressway Construction

An increasing number of major U. S. cities are building express highways to speed flow of traffic to and from downtown districts, the American Public Works Association reports.

In recognition of need for improved urban highways, the federal-aid highway act of 1944 appropriated $125 million yearly for three successive post-war years for construction projects on the urban portion of the highway systems. Authorizations for this work for fiscal years 1950 and 1951 total $225 million.

Cleveland is well ahead of most cities in deciding what it wants to do about the traffic problem and in beginning work on a long-term plan, a fiscal year-end report by the Federal Works Agency indicates. Plans for a freeway system were drawn up prior to the war and priority for different parts of the system were set. First priority was given to a freeway beginning about one mile south of the city and running to the downtown district. By the end of this year's construction season, the freeway will be open to traffic for a distance of 3.5 miles.

Detroit's $70,000,000 depressed expressway is expected to be entirely completed by 1953. The project is a joint undertaking of the state, county and city.

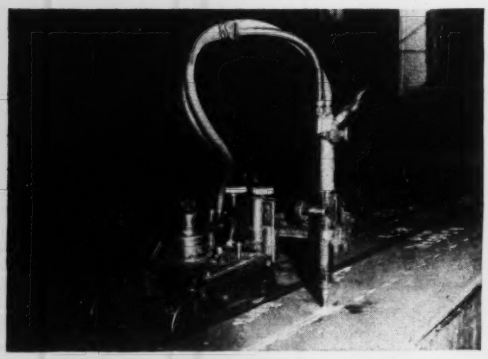
Construction of expressways has begun in four Texas cities. In Dallas, construction of two miles of freeway on the main north-south highway through the city is under way. There are to be no grade crossings on the route and parallel highways will serve local movements.

An express highway of 1.3 miles is being built in San Antonio with parallel roads to accommodate local movements.

In Forth Worth, two expressway projects of nearly six miles are under way. Both are on main U. S. routes and will cost about $4,400,000. More than four miles of freeways are under construction in Houston and plans are afoot to build a four-lane, six-story, double-deck skyway stretching from the east to west sections of the city.

Birmingham, Ala., has extended the existing divided highway on the northern approach to the city and has work under way on widening a major highway from 40 to 58 ft.

A four-lane divided freeway, 7.1 miles in length, was opened for traffic in San Diego, Cal., in the early part of this year.



Machine flame cutting of steel plus . . .

Flame softening of the edges enables . . .

Flame-Cut Structural Silicon Steel

C. Earl Webb, Chief Engineer
F. H. Dill, Welding Engineer
American Bridge Co.
Pittsburgh, Pa.

TESTS DEMONSTRATE dramatically that flame softening will make smooth flame-cut edges of structural silicon steel as ductile as machined edges. As a result, specifications may be modified to permit postheating to simplify and improve steel fabrication.

Necessity for cutting silicon steel, especially along curved or re-entrant lines, has made flame-cutting desirable ever since the metal was introduced in 1916 as a material for large bridges and buildings. However, hardness and edge roughness that sometimes result from flame cutting it are detrimental to its structural use. Consequently, specifications governing its fabrication have almost universally required the removal of $\frac{1}{8}$ or $\frac{1}{4}$ in. of metal from flame-cut edges to restore their structural usefulness.

Roughness of flame-cut edges, which has been principally attributable to flame-cutting with "hand" torches, can be prevented by machine flame-cutting —now a common practice. Tests made at Massachusetts Institute of Technology in 1934 as a summation of much practical experience showed that smooth, machine flame-cut edges of steel not hardened by flame cutting have the same strength and ductility as machined edges. Thus, one of the reasons for specifying removal of metal from flame-cut edges of silicon steel was eliminated.

Various methods for getting rid of the hardness at flame-cut edges have been tried in the last twenty years. During the course of these investigations, it was shown that sheared edges of structural silicon steel have so little ductility that specimens with sheared edges will bend only 45 to 90 deg. before breaking. Specimens having flame-cut edges not softened after cutting will break unpredictably at bend angles ranging from 10 to 160 deg. In contrast, proper application of heat, supplementing that supplied by the cutting torch, can make smooth flame-cut edges of structural silicon steel ductile enough to withstand the same amount of bending that machined edges will withstand.

Improvements in oxy-gas heating apparatus and recognition that ASTM-A94 structural silicon steel is metallurgically similar to silicon-killed SAE or AISI 1035 steel have been important factors in the development of flame-softening procedures. There has also been large-production use of flame-softening for reducing the hardness of flame-cut edges of very hardenable armor plate steels.

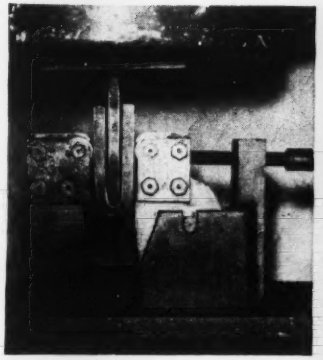
With such knowledge as a background, some relaxation of the requirement that metal be removed from flame-cut edges of structural silicon steel was granted in the fabrication of the Marine Parkway bridge in 1936. Permission to substitute flame-softening for removal of material from flame-cut edges was provided in the specifications for several large bridges, including the Greenville bridge over the Mississippi River in 1939, the Truman bridge at Kansas City, Mo., in 1944 and the additions to the Bronx-Whitestone bridge in 1946. However, specifications for other bridges continue to require the traditional removal of metal from flame-cut edges of silicon steel This anomalous situation has created requests for change of traditional requirements.

In support of some of these requests, a public demonstration was arranged to permit interested engineers to observe tests of a procedure for flame-softening flame-cut edges. Specimens were machine flame-cut with ordinary shop equipment at normal speed and oxygen pressure, and then the cut edge was raised uniformly and progressively to a red heat, visible in ordinary shop light, to a depth of at least $\frac{1}{16}$ in.

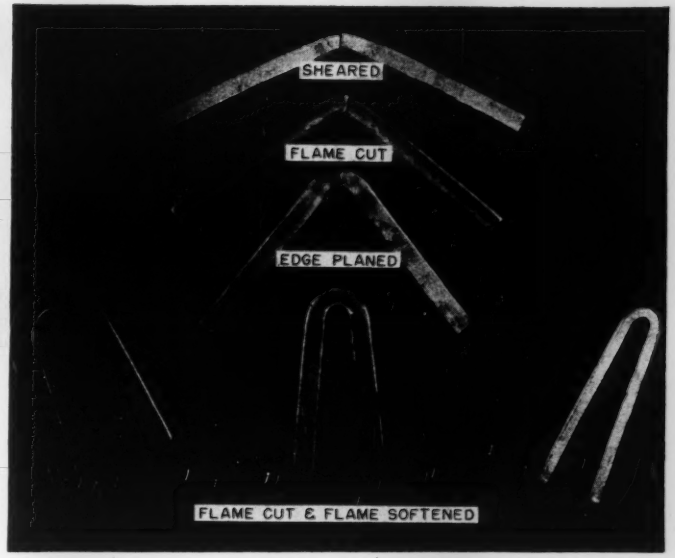
Material for the tests consisted of three plates, $\frac{3}{4}$, $\frac{5}{8}$ and $\frac{7}{8}$ in. thick, encompassing the thicknesses of silicon steel ordinarily used in making members for large bridges. The plates were ordered to and met the requirements of ASTM Specification A94 (Table I).

Under the supervision of R. W. Hunt Co. engineers, tensile and bend-test specimens with standard machined preparation and with flame-softened flame-cut preparation were made in quadruplicate to provide for three tests of each type of specimen in each thickness of material. The extra specimen was available in case of accident in the preparation or testing.

Results of the tensile and bend tests are listed in Table II. They show that all specimens met the requirements of ASTM Specification A94, except two of the machined specimens that were a bit deficient in yield point.



Bend test to be passed.



Made Ductile

The demonstration proved that edges of ASTM A94 structural silicon steel that have been softened after machine flame cutting by being heated uniformly and progressively to a red heat, visible in ordinary shop light, to a depth of at least ⅛ in., will meet the physical test acceptance requirements of ASTM Specification A94.

Data developed in this demonstration, together with information from other investigations and practical experience, have been used to prepare modifying clauses that may be incorporated in specifications.

The first of these, which is for use of the particular procedure demonstrated is:

> ——except that machine flame-cut edges of silicon steel may be used without such removal of metal if they are softened after cutting by heating the cut edge uniformly and progressively to a red heat, visible in ordinary shop light (1,150 to 1,250 deg. F.), to a depth of at least ⅛ in.

A second, which is generalized to permit the use of other procedures as well, is:

> ——except that machine flame-cut edges of silicon steel may be used without such removal of metal if they are softened by postheating in a manner satisfactory to the Engineer.

Recognition of the merits of flame softening as a means of restoring the structural usefulness of machine flame-cut edges of ASTM-A94 structural silicon steel will result in neater, simpler and better fabrication of the steel, especially where curved and re-entrant edges are encountered.

TABLE I - PLATE IDENTIFICATION AND MILL TEST RESULTS

Size – In.	22 x 3/8		23 1/2 x 5/8		23 x 7/8		Requirements of ASTM Specification A 94	
Heat	32L241		32M534		21L206		Chemical Composition	
Analysis	Ladle	Check	Ladle	Check	Ladle	Check	Ladle	Check
C	0.34	0.37	0.37	0.37	0.37	0.38	0.40 max.	0.44 max.
Mn	0.62	0.63	0.59	0.57	0.74	0.69		
P	0.026	0.026	0.017	0.016	0.013	0.014	0.04 max.	0.05 max.
S	0.044	0.044	0.031	0.030	0.035	0.036	0.05 max.	0.063 max.
Si	0.23	0.22	0.28	0.29	0.27	0.25	0.20 min.	0.18 min
Physical Tests	Mill Test		Mill	Test	Mill Test		Physical Properties	
Tensile Strength – psi.	85,440		82,300	83,260	89,660		80,000 to 95,000	
Yield Point – psi.	51,750		50,860	50,260	48,490		45,000 min.	
Elong. in 8 in. Percent	22.0		23.0	22.5	20.5		1,500,000 ÷ T.S. min.	
Red. of Area Percent	35.3		36.7	42.8	34.8		30 min.	
Bend	OK		OK	OK	OK		⅜ in. and under D = T over ¾ to 1 in. D = 1½ T	

TABLE II - RESULTS OF DEMONSTRATION TESTS

Plate Thickness in.	Standard Machined Specimens					Flame-Softened Flame-Cut Specimens				
	Tensile Strength psi.	Yield Point psi.	Elong. in 8 in. Percent	Red. of Area Percent	Bend Test	Tensile Strength psi.	Yield Point psi.	Elong. in 8 in. Percent	Red. of Area Percent	Bend Test
3/8	85,790	53,860	21.1	35.3	OK	84,920	55,470	21.3	47.0	OK
	87,180	54,770	21.2	49.3	OK	85,940	55,640	18.8	36.3	OK
	87,140	55,120	20.4	46.4	OK	85,440	55,020	21.3	49.3	OK
Av.	86,700	54,580	20.9	43.7		85,430	55,380	20.5	44.2	
5/8	83,650	45,890	19.1	44.6	OK	80,230	47,480	24.0	50.5	OK
	82,860	45,640	23.3	48.3	OK	80,710	49,620	25.0	50.4	OK
	81,490	44,790*	23.5	41.8	OK	80,490	47,250	24.6	51.2	OK
Av.	82,670	45,440	22.0	44.9		80,480	48,120	24.5	50.7	
7/8	85,640	43,430*	22.3	33.0	OK	84,770	49,410	24.5	43.8	OK
	85,620	45,460	23.0	47.4	OK	83,120	48,580	23.3	47.6	OK
	87,850	46,220	22.5	43.4	OK	84,660	50,060	24.3	50.3	OK
Av.	86,370	45,040	22.6	41.3		84,180	49,350	24.0	47.2	

* Indicates values below specification requirements (See Table I).

FIG. 1. REFRACTION SEISMOGRAPH developed for use in shallow subsurface explorations for advance highway studies.

Subsurface Road Conditions Revealed by Geophysical Methods

F. W. Cron and R. Woodward Moore,

Respectively, Senior Highway Engineer, Division of Eastern Park and Forest Roads, Gatlinburg, Tenn., and Highway Engineer, Physical Research Branch, Washington, D. C., for the Bureau of Public Roads.

THE SCIENCE OF GEOPHYSICS has provided the engineer and contractor with two new and extremely useful methods for exploring the subsurface. These are the refraction seismic test and the earth resistivity test.

Originally developed for locating structures associated with oil and various ore bodies sought in mining operations at depths of hundreds or even thousands of feet below the surface, these methods have been adapted to shallow investigations so that they will provide reasonably accurate information on subsurface conditions likely to be encountered in the construction of highways, dams, buildings and other structures. When supplemented by information secured by the older direct methods they will yield reasonably reliable answers to most of the questions brought forward by engineers and contractors concerning subsurface conditions.

Utility of geophysical methods of subsurface investigation was well demonstrated on a heavy highway grading project constructed by contract in the Great Smoky Mountains National Park for the National Park Service under the supervision of the Bureau of Public Roads. This project was a relocation of the old Fighting Creek Gap Road which lies in the upper end of the Fighting Creek valley near the Gatlinburg, Tenn., entrance to the park.

The old road followed the bottom of the valley on rather easy alignment and grades for 1¼ miles and then twisted abruptly out of the steep upper end in a dangerous 1¼-mi. stretch known locally as the "Fighting Creek Grade." In this short section the road climbed 650 ft. on grades that were everywhere 10 percent and in places as steep as 16 percent. Almost every year accidents occurred on this grade

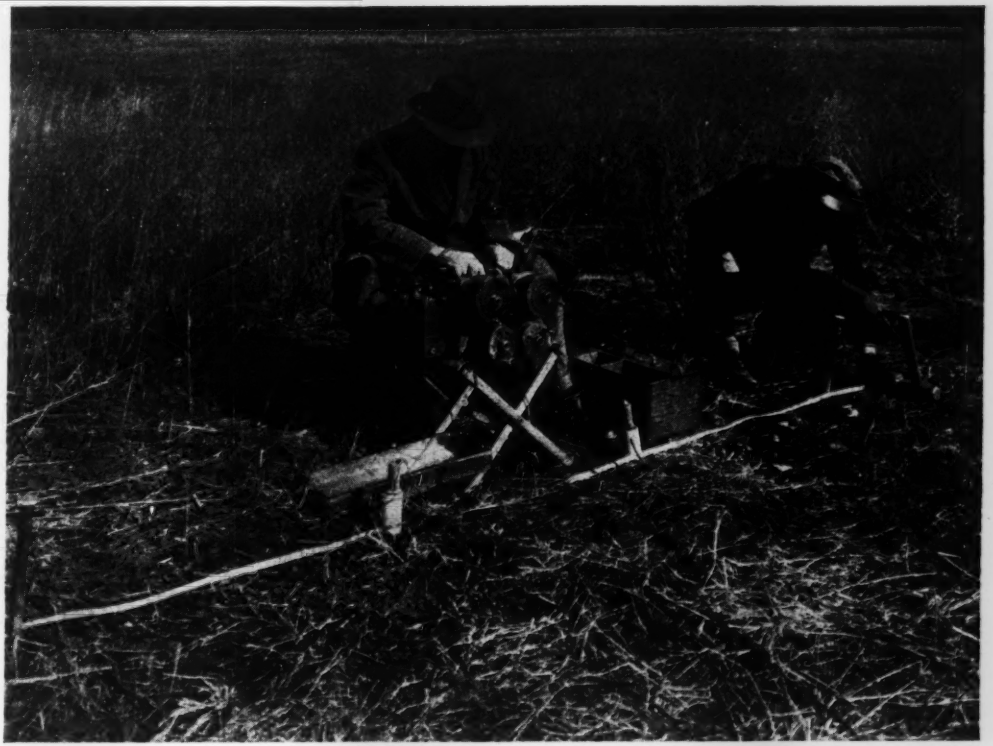


FIG. 2. VARIATIONS IN RESISTIVITY of soil along the proposed route also are used to determine underground conditions.

due to brake failure or to cars coming down out of control. Relocation of this hazardous section was the first major construction job undertaken in the park after World War II.

Geology of the valley

Fighting Creek valley runs generally in an east-west direction and is remarkably straight. It is also peculiar in that outcrops of quartzite and other hard rocks are plentiful on the north slopes of the valley, but are entirely lacking on the lower south slopes. The south side of the valley is considerably wider than the north side and the topography there presented an opportunity to reduce the grade by introducing additional distance. This condition, rather than the apparent absence of hard rock, was the controlling factor in selecting this side for the new location.

The geology of the valley had never been adequately mapped, so little or no information concerning the existing geologic formations was available when plans were being prepared. Consequently, after alignment and grade had been selected, a soils survey was made to discover what materials were present. This work was done by sinking hand-bored earth-auger holes at points on or near the centerline. However, these holes gave very little indication of what lay beneath the surface as most of them were stopped by obstructions at a depth of 5 to 6 ft.

This survey yielded practically no information of value for designing cut and fill slopes, or in assuming a shrinkage factor for the job. Without digging test pits there was no way of knowing whether the obstructions were boulders, hard bedrock, or thin lenses of hard shale. The absence of outcrops favored the assumption that there was no hard rock in the cuts, yet the sides of ravines of small streams seemed too steep for earth or boulder formations. Consequently, before undertaking the labor of digging pits, arrangements were made for a geophysical subsurface survey.

The field party assembly for this survey consisted of the geophysicist or engineer, two assistant highway engineers and five engineering aids, including one axeman. This number of men was greater than the four-man field party ordinarily required. However, training in the use of the apparatus was one purpose of the survey and the additional personnel were useful on extremely steep side-hill slopes and in areas thickly covered with underbrush. Two days were spent in making calibration tests and familiarizing the personnel with the apparatus.

The actual resistivity survey was made in two more days, at an average rate of ¾ mile per day. In all, 62 tests were made with the resistivity apparatus of which 14 were made during the first two days for training or calibration. Total cost of the survey for direct labor, exclusive of the time of the geophysicist and the time spent in training, was about $350, but with experienced personnel this cost probably would not have exceeded $200.

Seismic test methods

Refraction seismic tests depend upon density and elasticity of the Earth's materials. They are made by measuring the velocity of travel

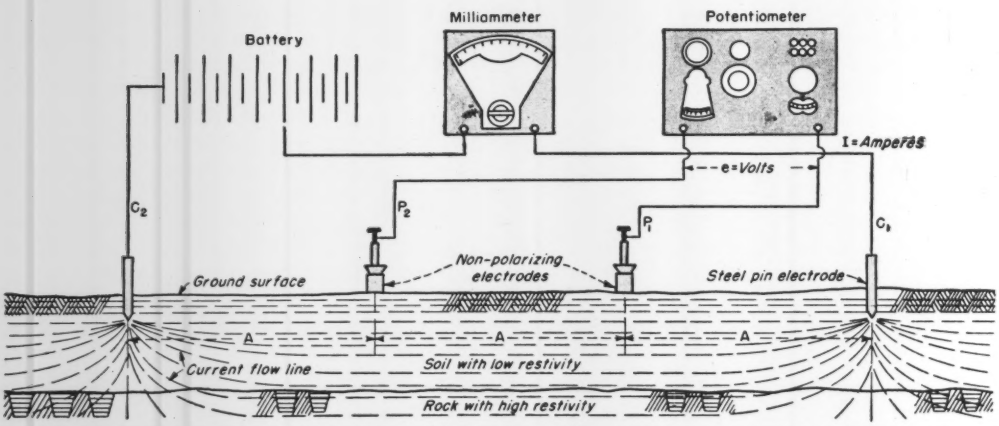


FIG. 3. ELECTRIC-RESISTIVITY APPARATUS used in subsurface studies, showing the four-electrode configuration normally employed. The spacing of electrodes is increased as the depth to be explored increases.

through the earth of shock waves started by the explosion of small charges of dynamite. Wave velocities in loose unconsolidated earth may be as low as 600 to 1,000 ft. per sec., while in dense solid rock the velocity may be as high as 15,000 to 20,000 ft. per sec.

For intermediate conditions such as sand, gravel, boulders, hard pan, shale, broken or weathered rock, the velocities may range from 3,000 to 8,000 ft. per sec.

When investigating such intermediate conditions some knowledge of local conditions is necessary before the operator can fully interpret the seismic data. Usually it is possible to calibrate the seismic test against known conditions in the area.

Portable equipment developed

Seismic testing was formerly economical only where the rather heavy equipment required could be carried in by truck. However, the Bureau of Public Roads has developed special equipment for shallow work (depths up to 200 ft.) which can be broken down into four one-man loads, each of which can be easily back-packed over rough country. This equipment, illustrated in Fig. 1, contains the following elements:

The oscillograph	55 lb.
Cable and reels	35 lb.
Detectors and short cables	30 lb.
Camera, developing tanks, changing bags, etc.	20 lb.

With this equipment a party consisting of an operator, one assistant and two or three laborers can make from four to eight tests per day, depending upon the local conditions and depths investigated.

Resistivity test methods

The earth resistivity test depends upon an electrolytic action within the materials under study to conduct an electric current applied at the surface through suitably placed electrodes. The specific resistance or restivity of the various materials making up the earth's crust varies widely. It is very low for certain moist silts or clays, and for salty waters, and very high for dry materials or for very compact materials, such as solid rock which have few avenues for moisture and the electrolytic action necessary for current flow.

A diagram illustrating the resistivity method of test is shown in Fig. 3, in which C_1 and C_2 represent steel pin electrodes driven into the ground and P_1 and P_2 are non-polarizing electrodes resting on the surface. Direct current from the battery flows through the earth between the two outside electrodes. The potential drop between the two inside electrodes P_1 and P_2 is then measured by the potentiometer and the current flowing through the ground is measured by the milliammeter.

From these electrical measurements the specific resistivity of a volume of earth to a depth comparable to the spacing of the inner electrodes can be computed. By progressively increasing the electrode spacing and repeating the measurements, a series of values for a curve showing the relation of resistivity to depth can be obtained.

Curve A of Fig. 4 is such a curve. Curve B is a cumulative curve constructed by adding each resistivity value of Curve A to the summation of all preceding resistivity values. It has been demonstrated empirically that a straight line on the cumlative curve indicates material of uniform resistivity, and, presumably, fairly uniform composition. A change in the slope of the cumulative curve usually indicates a change in type of material at a depth corresponding to the electrode spacing at the point of intersection, as shown in this figure.

As with the seismic test it is desirable to make calibration tests over exposed or known subsurface conditions, as resistivities vary widely in different sections. The calibration curves, when compared to curves made over unknown formations provide a means of interpreting the latter in terms of materials probably present. This type of test is useful for prospecting wide areas for sand and gravel, special soil or solid rock. It has been used in various parts of the country to study peat bogs, swampy areas, potential slide areas where talus materials overlie sloping impervious shales, and for preclassifying rock and earth excavation.

The resistivity apparatus used by the Bureau of Public Roads is shown in Fig. 2. Readily portable, it can be broken down into four one-man loads as follows:

Instrument box	26 lb.
Battery box	26 lb.
Wire and reels	22 lb.
Hammers, pins, tapes, electrodes, etc.	21 lb.

With this apparatus a field party

consisting of an operator, recorder and two assistants can make from 20 to 25 tests in an 8-hour day in open country. In rough, mountainous, or very brushy country three additional assistants might be required.

Relative utility of the tests

For a definite indication of solid massive rock the seismic test is more reliable than the resistivity test, since a high-speed wave is seldom found in other than hard dense materials. However, if the engineer has a good general idea of what subsurface formations are likely to be encountered, the much faster earth resistivity tests will prove more economical and usually quite dependable. Operation of the seismograph is somewhat complicated and requires more technical knowledge and ability than the resistivity apparatus. The seismic apparatus, particularly the oscillograph, is heavier, and more subject to being jarred out of adjustment if not handled carefully. In addition, a supply of dynamite and caps must be kept on hand and transported with the attending inconvenience of handling and storing.

For these reasons it is usually more convenient to conduct a resistivity survey first and use the seismic test as a rapid means for checking the results. When the resistivity data appear incomplete, inconclusive or questionable the seismic test may quite often prove a practical means of obtaining the desired information. Supplemental tests with soil auger or test pit at selected locations round out the information desirable for a thorough subsurface survey. This procedure was followed in making the subsurface survey being described.

Information revealed by tests

Resistivity curves obtained from this survey were of two general types. In one type, shown as Curve A in Fig. 5, the initial resistivity values were fairly high, 300,000 to 400,000 ohm-centimeters, for several electrode spacings, followed by a very decided drop to a value of 200,000 ohm-centimeters or less at a depth of 60 ft. In the second type curve, shown as Curve B in Fig. 5, the initial resistivity values, though often high for the first electrode setting, began dropping immediately, usually reaching a low of 50,000 to 60,000 ohm-centimeters at 60 ft. Curve C illustrates an intermediate type curve made over an exposed high bank of soil and boulder formation.

These curves strongly resembled those obtained elsewhere over earth or earth and boulder formations. They did not resemble curves obtained where earth was known to overlie hard solid rock. It appeared, therefore, that most of the materials in the cuts for the new road would be earth, earth and boulders, or soft shattered shale thoroughly saturated with moisture. Such materials are easily excavated with a power shovel. This interpretation was confirmed by seismic tests in the deepest cut of the job which indicated no high-velocity material above the grade line.

Subsurface findings confirmed

This was useful information as it enabled the engineer to set the side slopes and make an estimate of shrinkage. However, because of the unfamiliarity of highway contractors with geophysical methods more direct information was sought to put on the plans. The soils survey party was sent out in the field again armed with picks, shovels, augers, heavy probing bars and dynamite. Test pits were sunk, some as deep as 8 ft. More auger holes were sunk. When obstructions were encountered they were broken through with the probing bars or loosened with dynamite. In this manner hand auger holes were sunk to depths of 6 to 28 ft. in practically all of the cuts and to a depth of 32.5 ft. in the largest cut on the job.

This additional boring work cost about $350. Information obtained from this second set of borings was placed on the plans and the project was advertised for bids.

Bids received for unclassified excavation proved that the money spent for the subsurface survey and the additional borings was well invested. Eleven bids were received, ranging from $0.38 to $1.17 per cubic yard for the item of unclassified excavation, with most of the bids under $0.60 per cubic yard. The E. W. Grannis Company of Fayettesville, N. C., low bidder for the contract as a whole, which bid $0.39 per cubic yard, later stated that the deep auger borings strongly influenced their bid for excavation. Had not these borings largely removed the fear that solid material would be found in the bottoms of the cuts the bids might have been higher.

Actual construction proved the reliability of the predictions based on the geophysical survey. Practically all material in the project turned out to be shattered shale or decomposed siltstone, so soft that it could be easily carved with a penknift and could be pulverized readily under the sheepsfoot roller.

A small amount of the shale near the upper end of the project had to be drilled and blasted, but most of it was easily dug with carryall scrapers, assisted occasionally by a rooter, or by a 2½ cubic yard power shovel which ripped through the soft formations with ease. The material as it came out of the cuts was practically at optimum moisture content for maximum compaction, and this dampness probably accounted for its low resistivity.

Tests subsequent to excavation

It seldom is possible to return to the location of particular resistivity depth tests and make other tests directly below the centers of the first ones and 20 to 30 ft. below the original ground surfaces. This, however, was

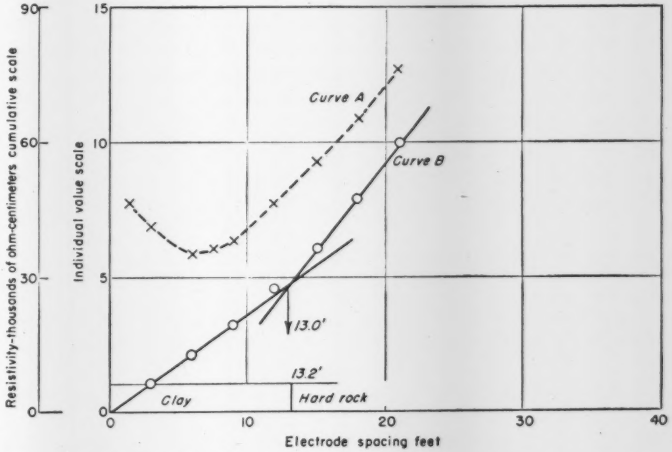


FIG. 4. EMPIRICAL METHOD of analysis applied to the resistivity curve for a clay stratum underlain by rock.

possible after the project described here had been graded, and some interesting information was secured.

For example, these later tests strongly indicated that if a correction were made for the depth of cut the new curve would practically coincide with the lower portion of the original curve, as shown by Fig. 6. Curve A shows data from a resistivity test made on the original ground surface, while Curve B was obtained after excavation of the cut on the finished grade. Curve C is a replotting of Curve B displaced by a distance equal to the depth of cut in feet.

In all cuts where the resistivity curves made after excavation dropped to values of 30,000 to 40,000 ohm-centimeters, the excavated material was soft enough to be cut and loaded easily with rooters and carryall scrapers. The only cut where blasting was required was in the Fighting Creek Gap, and there the resistivity was 130,000 to 140,000 ohm-centimeters.

Usefulness of geophysical methods

The geophysical survey described above was undertaken primarily to obtain definite information for design purposes. A supplementary purpose was to determine how the geophysical tests which had heretofore been conducted by research personnel could be applied in the field by the design and survey personnel responsible for preparing plans and estimates. The survey demonstrated conclusively that highway field engineers can with very little additional training conduct resistivity surveys rapidly and efficiently and can interpret the field data without expert assistance. The apparatus is simple to operate and does not easily get out of adjustment. A trained resistivity party can cover a mile of survey a day in rough country and even more in open country at a cost of $75 to $150 per mile.

The seismic test is considerably more difficult to make and interpret and would require the services of a man with some special training. A graduate highway engineer could probably be trained to conduct and interpret the tests and service the equipment in a special course lasting about two weeks. His field assistants would need no special training. Assuming that about 24 tests would be required per mile, a party trained for seismic testing would probably make about one-third mile per day and the cost would run from $200 to $450 per mile.

Since geophysical tests are somewhat general in that they indicate average conditions existing in a rather large volume of earth, they cannot always be expected to check depths to rock or other formations as obtained at a single point by drilling. Where subsurface formations are irregular, with localized peaks and valleys, this may even be advantageous, since a single drill hole may fall on a high or low point and be erroneous as regards the general contour of the formation. Geophysical tests can in most cases tell the engineer or contractor that the subsurface material will be earth, shattered or soft rock, or hard rock, and at approximately what depth one material changes to a noticeably different material.

Many instances are on record where geophysical tests have proven quite accurate with regard to the point of contact of earth with rock in explorations for foundations for bridges, buildings and large dams. Exact information concerning the character of the materials, their density, porosity, degree of weathering, etc., must be obtained by drilling or by digging test pits. Much unnecessary direct exploration, however, can often be eliminated by using the faster and less expensive geophysical test in the preliminary survey to indicate where direct tests will prove of the most value.

It is in mountain work that these methods are often most useful. If there is no geologic map available, and there are no outcrops, road cuts or other exposures in the vicinity, it is often difficult, as in the project discussed above, for the engineer and contractor to do more than guess at the materials underneath. Indeed, where faulting of the major formations has occurred, as was the case under discussion, such outcrops as may appear in the vicinity of the proposed project may prove to be entirely misleading.

The Physical Research Branch of the Bureau of Public Roads furnished the equipment and an engineer experienced in its operation; all other personnel came from the bureau's Division of Eastern Park and Forest Roads. Philip B. King of the U. S. Geological Survey was consulted as to the geology of the area.

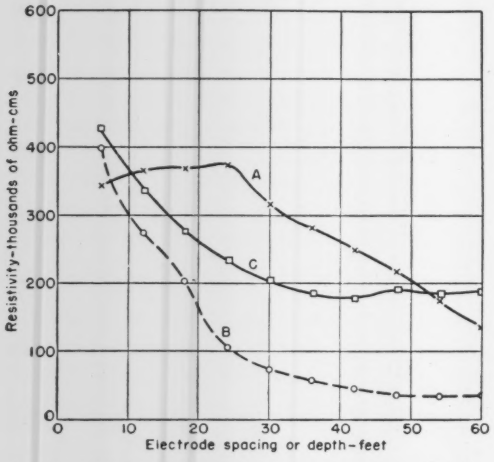


FIG. 5. RESISTIVITY CURVES obtained in studies for the Fighting Creek Gap road. They indicate earth or earth and boulder formations rather than earth over solid rock.

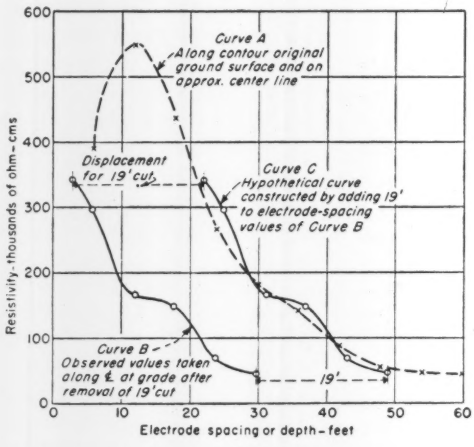
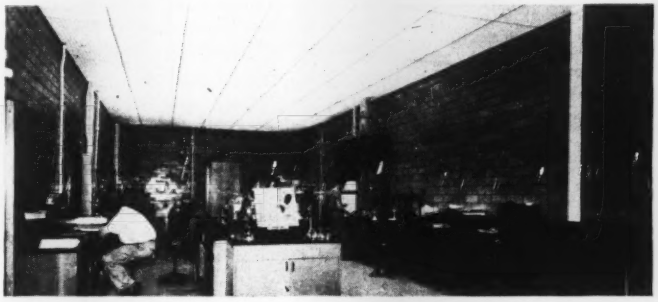

Curve A
Along contour original ground surface and on approx. center line
Displacement for 19' cut
Curve C
Hypothetical curve constructed by adding 19' to electrode-spacing values of Curve B
Curve B
Observed values taken along ℄ at grade after removal of 19' cut
19'
Resistivity-thousands of ohm-cms
Electrode spacing or depth-feet

FIG. 6. EARTH RESISTIVITY CURVES recorded before and after excavating a cut 19 ft. deep, indicating how closely the preliminary exploration revealed actual conditions.

WINDOWLESS WALLS inclose a completely air-conditioned plant in Alabama.



EGG-CRATE LOUVERS shield the fluorescent lights, form the laboratory ceilings.

Rayon-Yarn Plant—1949 Model

THE RAYON-YARN PLANT recently built for Beaunit Mills, Inc., at Coosa Pines, Ala., near Childersburg, is windowless and completely air conditioned.

Although it has been standard practice in the rayon-yarn industry to air condition important process departments fully, this is one of the first instances in which all departments have been so treated. The main object is to keep the inside of the plant entirely free from unfiltered air and thus to prevent dirt from contaminating the product. However, employee comfort was an important consideration.

The plant also incorporates acid-resistant construction and many features aimed at cleanliness and minimum maintenance.

Estimated to cost about $15,000,000, it is designed to produce 10,000,000 lb. of filament viscose rayon annually by the pot-spinning process. There are 285,000 sq. ft. of floor area in the 350x500-ft. building, which consists of the following:

A three-story and basement alkali-cellulose section; a three-story chemical recovery section; a one-story and basement spinning room, washing and bleaching department; a one-story portion for yarn drying, conditioning, storage and shipping; and a one-story section for offices, laboratories, shops, toilets and locker rooms. The alkali-cellulose portion is 94x188 ft. in plan, designed for gravity-flow production.

Long-span trusses in spinning room

The building has a structural steel frame, which is protected in all acid areas by a synthetic-resin base paint. In the spinning room, the roof is supported on 65-ft. trusses spaced 21 ft. 4 in. on centers. Elsewhere, bays are 22 by 24 ft., and the roof is carried on girders. Purlins are spaced 7 to 8 ft. on centers.

The roof consists of precast concrete slabs. It is insulated with 3 in. of vermiculite concrete and covered with 20-yr. bonded built-up roofing.

Floors, in general, are concrete with special ½-in. thick cement finish. Slabs above ground are of reinforced concrete carried on the steel frame. Asphalt mastic floors 1 in. thick are used in aerator sections, acid-recovery, cake-aging, jet room and spinning room. The office, cafeteria and laboratory are finished with asphalt tile flooring.

Entirely inclosing the building, the outer walls consist of a 4-in. brick exterior, 8-in. cinder-block backup and 2-in. glazed-tile interior facing. They are insulated with glass fiber around areas of high humidity.

Interior walls serving as fire walls are 12 in. thick. They consist of glazed tile facing on both sides of a 4-in. cinder-block core. Partitions consist of 6 or 8-in. double-faced glazed tile. Extensive use was made of tile for ease of cleaning and to minimize maintenance.

Lighting is mostly fluorescent. In the offices and laboratories, where the tubes are placed in egg-crate louvered ceilings, the illumination level is 50 ft.-candles. In the manufacturing areas, 35 ft.-candles are generally provided. Continuous-troffer, single-tube, deep-reflector, concentrating-type fixtures are used over the spinning machines. Acid-resistant, these fixtures are made of anodized aluminum and have neoprene-gasketed wiring channels. Incandescent fixtures are provided in storage areas, where the lighting level is 15 ft.-candles.

Large volume of air circulated

Air conditioning the various departments involves use of dehumidified-air systems, evaporative-cooling systems, heating systems, ventilation systems and exhaust systems. The air volume handled—about 2,000,000 cfm. for supply and exhaust—necessitates 19 stations throughout the building.

All central air stations handling dehumidified air have chilled-water circuits piped into them. The temperature of the chilled water is maintained by two centrifugal compressors located in one room.

Two axial-flow fans, installed in parallel, exhaust air from the spinning room. This is the first application of large-capacity axial-flow fans in the rayon industry.

Construction was pushed at high speed. Excavation—in which 50,000 cu. yd. of earth were moved with tractor-drawn pans—started April 1, 1948, and was completed three weeks later. Erection of structural steel started in August of that year and portions of the building were ready for equipment on Oct. 1. The structure was completely finished in May, 1949.

The plant was designed by Lockwood Greene Engineers, Inc., of New York City. Howard Weiss was resident engineer. Daniel Construction Co. of Birmingham, Ala., was the general contractor, with H. A. Longerier as engineer in charge.

DEVELOPMENTS ABROAD

New world road treaty signed at Geneva meeting

Switzerland—A new world treaty on road traffic—signed three weeks ago at Geneva—will become an important aid to international travel, according to H. H. Kelly, assistant director, office of transport and communications, Department of State. Mr. Kelly headed the U. S. delegation to the Geneva conference.

The new treaty modernizes and simplifies the requirements for motorists taking their cars abroad and traveling from one country to another. Delegates from the United States and twenty other nations signed the Geneva draft.

When ratified and put in effect by the participating nations, the new treaty will supersede the Paris convention of 1926. To gain the approval of all the participating nations, the treaty lists a group of fundamental provisions in the main document and amplifies those basic points in a series of technical annexes. The annexes have the advantage that they can be amended by agreement among the contracting countries, without need for another diplomatic conference.

Among its basic points the treaty:

(1) Recognizes the sovereign rights of the contracting nation and their subdivisions to control of highway traffic (lack of recognition of the subdivisions—the states of the U. S.—had kept this country from becoming a party to the 1926 Paris convention).

(2) Establishes simple customs formalities, including use of an international customs pass for motor vehicles.

(3) Excludes for-hire operations of trucks and buses; they will be covered later by a separate treaty.

(4) Prescribes a few simple rules of the road.

(5) Provides reciprocal recognition of a car owner's domestic registration certificate by all countries, making it unnecessary to carry a special international certificate.

(6) Authorizes a distinctive plaque on the rear of the car to show the country of origin (for U. S. cars it will be "USA").

(7) Specifies a few basic mechanical requirements for brakes, lights and other equipment.

(8) Authorizes a standard international driver's license (subject to special consideration in the United States, where federal and state authorities will have to determine the proper policy to be followed. Many foreign nations are ready to grant reciprocal recognition of drivers' licenses; the U. S. can have the same privilege.

(9) Recognizes the authority of motorists' associations to issue international documents, when properly empowered to do so; in this country, for example, the American Automobile Association and the American Automobile Touring Alliance might be authorized to act.

U. S. leadership proved especially significant in drafting the technical annexes. Mechanical requirements for motor vehicles—including brakes, lights and other equipment items—made a long step toward international uniformity.

Even more significant were the maximum sizes and weights adopted by the conference. After many days' discussion, delegates accepted standards based on U. S. experience and expected to have a profound influence on design and construction of both highways and vehicles throughout the world.

The Geneva conference recommended that the UN study the possibility of developing a worldwide system of highway signs and signals. More will be heard of this proposal, Mr. Kelly predicted.

Help for Ecuador

The board of directors of the Export-Import Bank has expressed its willingness to consider extending credits to cover a part of the dollar cost of materials and equipment to be acquired in the United States for the needs of Ecuador in the reconstruction of essential facilities damaged in the recent earthquake disaster.

The bank is sending a mission to Ecuador to appraise the extent and character of the reconstruction requirements. Elmer E. Chase, chief of the bank's examining division, R. Henry Rowntree, economist working on Latin American problems, and Frank Kimball of the bank's engineering division have left for Ecuador.

Tunnel

Cuba—A group of Miami, Fla., engineers and a New York tunnel expert—Earle Rader, of Knappen, Tippetts, Abbett Engineering Co.—are starting preliminary study and planning for a projected tunnel under the entrance to Havana harbor, at the request of President Carlos P. Soccarras of Cuba. It would be a vehicular tunnel costing between $15,000,000 and $20,000,000, and it would be laid under the 700-ft. wide entrance to the harbor to connect Havana proper with the peninsula on which Morro Castle and La Cabana fortress stand. It would also provide a more direct route from the capital to cities along Cuba's east coast.

Mr. Rader says Ole Singstad, New York tunnel engineer, will be with other engineers on the project.

Prefabs

India—India's first factory to manufacture prefabricated houses is due for completion by November, and will be turning out 100 structures a week by mid-1950. The plant, built and managed by Structural & Mechanical Development Engineers Ltd., Slough, England, will construct the houses of cellular or "aerated" concrete. The buildings will have a plinth of 500 sq. ft. and afford two rooms, kitchen, bath and lavatory. Selling price, not yet finalized, is expected to be about $850.

Cement

Puerto Rico—A new cement mill of 800,000 bbl. annual capacity is to be built here. Caribe Cement, a new corporation, expects to establish its new plant near San Juan by the end of the year. Incorporators are a group of engineers, contractors and building supply dealers. Equipment is to be purchased in the United States.

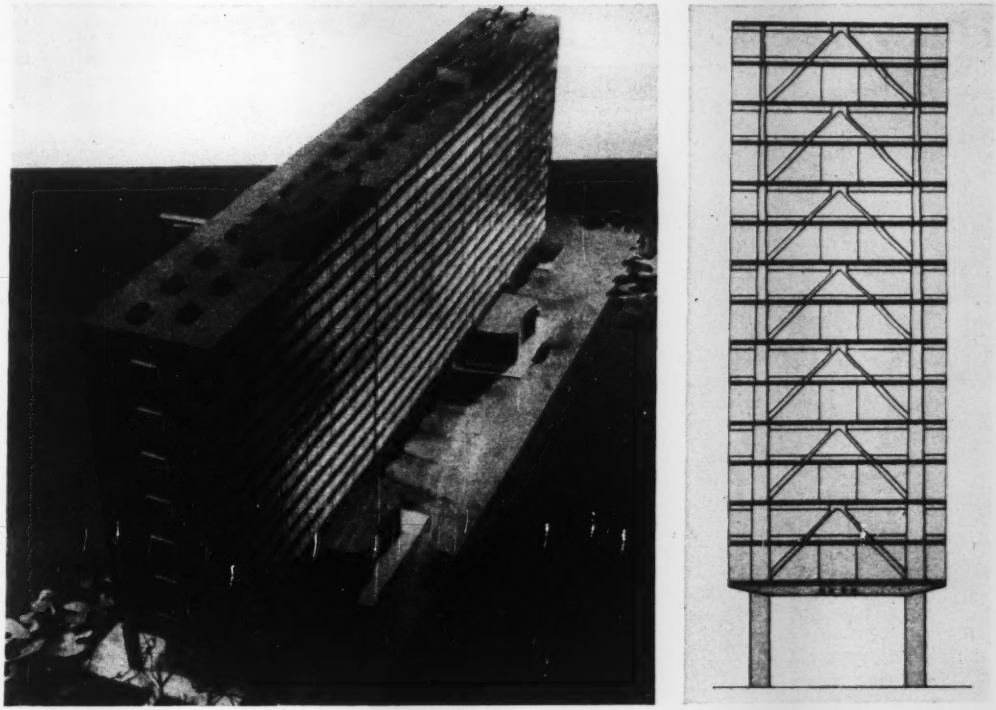
To celebrate 100 years of reinforced concrete

On Nov. 8-10 the government of France will celebrate the centenary of the invention of reinforced concrete, since the Frenchmen, Lambot, Monnier and Cognet, are credited with the discovery of the ingenious process now so generally used in construction.

The celebration is organized by the Chamber of Reinforced Concrete Makers under the patronage of the Minister of Public Works, Transportation and Travel, the Minister of Industry and Commerce, and the Minister of Reconstruction and Municipal Affairs.

There will be a meeting at which the President of the republic will be present. Other features are technical conferences, a tour of reinforced concrete works and yards, an exposition, including a review of reinforced cement from the beginning to the present, including the most recent and most characteristic examples, and a forecast of future developments.

More information is available from the Secretariat of the Chambre Syndicate des Constructeurs en Ciment Armé, 3 Rue de Lutèce, Paris (IV^e^).



ARGENTINE HOUSING—This 14-story Buenos Aires building will have 336 duplex apartments, each containing about 1,000 sq. ft. of floor area. The structure will be of reinforced concrete, and its ground floor will be open as shown in the illustration. This is the first building in a new residential area called Bajo Belgrano, which eventually will have living accommodations for 50,000.

Irrigation and Water Supply

Mexico—The governor of Oaxacal in southern Mexico has announced that construction will begin early in 1950 on El Marquez Dam in the Isthmus of Tehuantepec, with funds supplied by the federal government. The dam will provide irrigation water for about 175,000 acres.

East Africa—Nairobi, the capital of Kenya, is expected to double its population in the next 25 years. Consequently it is taking steps to provide an adequate water supply, and is now building on the Ruiru River, 17 miles from the city, a dam that will be the largest in East Africa. Then a still larger one is to be built on the Sasumua River, 40 miles away in the Aberdare Mountains. When completed in 1952, these two dams will guarantee Nairobi 7 mgd.

Australia—The state government of Victoria has approved expenditure of about $7,300,000 for enlargement of 1,200-acre ft. Eppalock Reservoir to 200,000 acre ft. The project calls for construction of a new dam on the Campaspe River, 15 miles from Bendigo.

Three-quarters of the available water will be used for intensive irrigation. About 20,000 acres of high-quality land will be subdivided into 100-acre farms.

The work will be carried out by the River and Water Supply Commission of Victoria as soon as materials, equipment and labor become available.

Work started officially on the biggest water supply project in Western Australian history as the Minister of Works laid the first length of concrete-lined steel pipe at Collie, south of Perth, late in August.

Officially known as the Comprehensive Agricultural Areas and Great Southern Water Supply Scheme, the project is estimated to cost $14-million. The expense will be shared equally by the state government and the federal treasury.

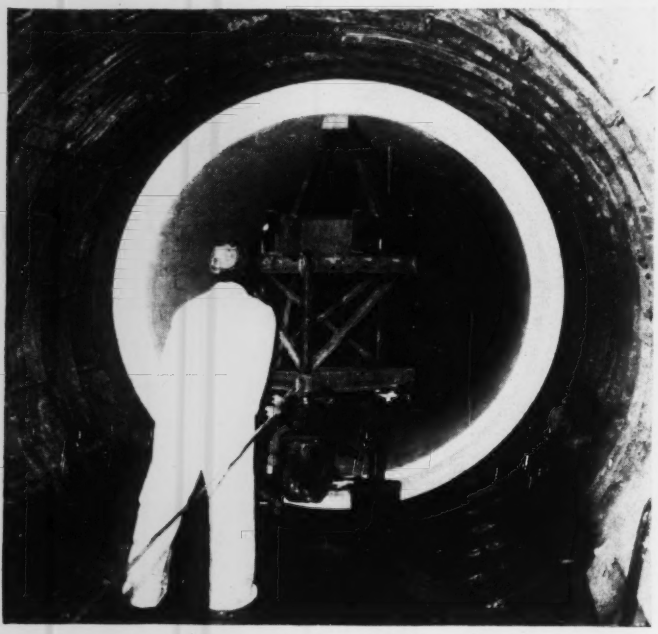
Water will be piped to the towns of Brookton, Pingelly, Narrogin, Katanning, Collie and Williams and will also be reticulated over 4,000,000 acres bounded by Kokardine, Koorda, Kondinin and Cunderdin.

The first section of the continuously welded 30-in. main from Wellington Dam to Narrogin will be completed in three years. The dam is located 10 miles west of Collie on the Collie River. It is a concrete gravity structure with a crest length of 1,200 ft. The dam is later to be raised to increase its storage capacity. Another storage which will be enlarged in connection with the water supply project is the Helena Reservoir (Mundaring Dam), from which the famous Goldfields Pipeline is fed.

Bridge

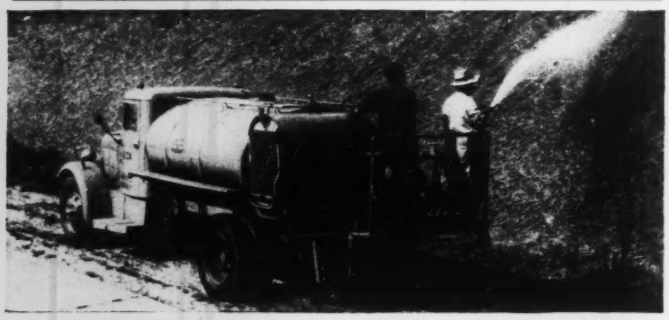
Brazil—The federal government has granted a credit of eight million cruzeiros (about $400,000) to the state of Espiritu Santo to build a 2,300-ft. bridge across the Rio Doce on the highway to link Vitoria, capital of Espiritu Santo, and Bahia, capital of the neighboring state of Bahia.

FIELD AND OFFICE



Dolly Devised to Place Pipe in Tunnel

PLACING PIPE IN A TUNNEL is made easy by this specially built dolly. As an air-tugger inches pipe forward, workman steers the dolly. When near final position, the middle wheel rides on pipe already in place and the other two wheels are retracted. Pipe is then set on concrete blocks and concreted in place. A-frame section on top comes off, so same dolly—used here on 84-in.—can also be used on 66-in. pipe. All wheels have jacks for lifting. The job is a $1,500,000, 9,000-ft. section of sewer interceptor for Special District No. 1 of the East Bay Municipal Utility District to serve Oakland, Calif., and other nearby cities. Dolly was devised by Maurice McClure of Stolte, Inc., Oakland—joint contractor on the project with United Concrete Pipe Corp. of Baldwin Park, Calif.



Roadsides Seeded Hydraulically; Fertilized Simultaneously

Grass seed is sown with a hose and fertilized in the same operation by the Virginia State Highway Department. Fertilizer is suspended in water, seed is added, and the mixture is sprayed on roadside areas previously mulched with hay or straw. Three men can do the work of 25 with the equipment rigged by the department for the purpose.

The special truck-mounted apparatus is made wholly of used parts: a 1,000-gal. tank from an outmoded watering truck, a motor that once propelled a ferry boat and a pump salvaged from an asphalt spreader.

Neither seed nor fertilizer clog the asphalt pump. An agitator in the tank keeps these solids from settling out. A mixture of 750 gal. of water, 1,000 lb. of fertilizer and 80 lb. of grass seed fills the tank, takes 20 minutes to spray and seeds one acre.

One man drives the truck, another mans the pump—regulating pressure—and the third handles the hose. Virginia highway engineers see distinct advantages over conventional seeding methods: Aside from speed in seeding, the wet planting method fertilizes simultaneously; it soaks the mixture into the ground and easily reaches high spots on embankments with a 40-ft. stream of water. Only one such device has so far been put to use, but the department plans to build others in the future.

E. A. Whitley designed and supervised construction of the seeder. His design is an adaptation of an apparatus once made in Connecticut. Highway department equipment depot personnel built the device.

Exhaust Gases Keep Ore From Freezing to Truck

In cold Canadian weather, Steep Rock Iron Mines Ltd. had a tough time keeping wet ore from freezing to the bottoms of 20-ton diesel rear-dump trucks that haul the ore out of an open pit. The mining company felt that the heat of diesel exhaust gases could be used to eliminate the problem.

Truck bodies are made up of two steel sheets interlined with oak to absorb shock. These pieces of oak were removed and replaced by longitudinal steel angles at a spacing that would give adequate support for the inner sheet of steel (the ore is heavy but it doesn't contain many of the large rocks that would test the shock-resistant properties of the oak). The space between angles became longitudinal chambers through which exhaust gases could be discharged. Exhaust was diverted from the usual vertical muffler to a new manifold at the front of the truck body bed. Gases pass under the load, keeping the steel sheets warm. Ore now slides out easily on the coldest working days.

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Fully automatic lubrication for Nordstrom valves is here! Introduction of Rockwell *Hypermatic* lubricant marks the greatest advancement in the valve industry since the invention of Nordstrom valves 30 years ago. Hypermatic is the first and only genuine automatic lubricant. Now you can cut your valve maintenance cost because your lubrication crew need devote only 1/10, 1/20, 1/50, up to 1/100 as much time to re-lubrication. Your Nordstrom valves will give better service with less cost because each one will be automatically maintained in a condition of 100% lubrication, even in event of considerable neglect.

Leakage will be prevented because Hypermatic both seals and lubricates with split-second action and positive certainty. Almost twice as much Hypermatic can be compressed into the valve's lubricant chambers, permitting increased storage.

NOTHING TO BUY EXCEPT THE LUBRICANT– Instead of resorting to the use of extraneous devices or endeavoring to use variable line pressure, Hypermatic provides a new system of lubrication which gives the effect of a vastly improved valve design. You don't have to invest a single cent in mechanical devices. You don't even have to purge the old lubricant. Simply switch to Hypermatic and apply it to your present Nordstrom valves.

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Greatest improvement in history of Nordstrom valves
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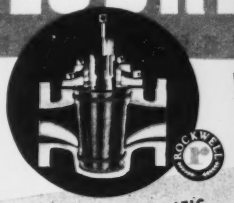
Tried, tested, proved in laboratory, field and plant
Keeps Nordstrom valves in state of perfect lubrication



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That's exactly what the Anderson Bridge Construction Co., Tacoma, did. In the heavy construction business for thirty years, this firm keeps abreast of the times by using up-to-date equipment. Now, when shovels, "cats," heavy timber and bridge steel have to be hauled, the job is assigned to their Fruehauf Machinery Trailer. All get to the spot quickly, safely and at less cost.

Take a look at the new Cora Bridge over the Cowlitz River, part of the new White Pass Highway. That's an Anderson Bridge Construction Co. span. Their Fruehauf Machinery Trailer hauled the equipment required for its erection.

But what about the Trailer itself? It's a model MT 55 for up to 25-ton loads. It has an unusually large, clear loading area. Ground clearance is exceptional. It has the famous LT type four-spring tandem Underconstruction for sure and safe going over rugged terrain, Fruehauf exclusive I-Beam Axles for greater strength and lighter weight. All in all, this is the Trailer for you. But should you need something to haul heavier loads, there's a 40-ton companion model with three axles.

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MUNICIPAL AFFAIRS

A HOUSE EVERY 20 MIN.—U. S. Steel is entering the low-cost housing field with a prefabricated 4-room house for the family of moderate income. The new 2-bedroom home is set for immediate production and mass marketing through the corporation's home fabricating subsidiary, Gunnison Homes, Inc. The house is to take advantage of the 95 percent FHA mortgage insurance, where the appraised value of the home and lot does not exceed $6,300. Homes qualifying under this price can be bought for $350 down and about $37 a month, including insurance and taxes. The company's new assembly line plant at New Albany, Ind., is geared for mass output of plywood houses at a rate of one every 20 minutes.

Municipal Enterprises

Revenue from municipal enterprises has risen to record highs in recent years, the Municipal Finance Officers Association reports.

Citing recently published Census Bureau figures, the association noted that the operating revenues from city-owned enterprises totaled more than $812,000,000 in 1947—an increase of 6.4 percent over 1946 revenue. At the end of 1947, 580 business undertakings were owned by the 397 cities covered in the survey of cities over 25,000 population.

Contributions by municipal businesses, excluding those of New York City, to cities' general revenue funds exceeded $55,000,000 in the year. However, if New York's operations were included the reverse would be true. More than $72,000,000 was contributed by that city in 1947 for operation of the subway lines alone.

Water-supply systems comprise the largest portion of the city-owned enterprises. The 322 systems accounted for $36,900,000 of the net contributions to cities in 1947. The 52 electric light and power systems contributed more than $15,800,000 to the cities' general revenue funds.

Gas-supply systems also were one of the top money-makers for cities. Net contributions to the general revenues of the 16 cities that own and operate gas systems exceeded $3,000,000. Municipal radio stations also paid off, with three of the four operated by cities of over 25,000 population contributing to the general fund.

City airport operations generally were in the red throughout 1947. Only 10 of the 119 airports operated by cities of over 25,000 population contributed to the general fund.

Litter Patrols

New York City officials have announced their satisfaction with first performances of the city's new litter patrols in their mission to keep the city's streets cleaner. In the first two weeks of operation the seven two-man patrols picked up 80 tons of refuse dropped in the streets along routes with heavy traffic in the five boroughs of the city.

The patrols pick up discarded newspapers, wrappings, cigarette butts and other material left on the streets and sidewalks, on heavily traveled thoroughfares and around subway entrances. The patrols operate in addition to the sanitation department's regular refuse collection service.

The litter patrols operate in two-man teams equipped with a small auxiliary sanitation truck, brooms, burlap bags, shovels and similar tools. Special routes, selected by sanitation superintendents, are covered by the patrols three times a day.

During the first two weeks of operation, the patrols traveled over 1,500 miles. Picked up along their route were such things as bed springs, mattresses, old baby carriages, iceboxes and bushels of "salad"—sanitation mens' term for discarded fruits and vegetables.

Success of the patrols has led to plans for a new truck designed especially for use in clearing litter. The new trucks would be of a type similar to the vans used by parcel delivery service, low slung and easily accessible.

Municipal Loans

Premier Leslie Frost of Ontario has announced the impending formation of a $50,000,000 Crown Corporation designed to lend money to municipalities of the province. It is hoped the move will encourage municipalities to go ahead with sewer, waterworks and incineration projects. Loans would be available at a lower interest rate than most communities usually could obtain elsewhere it is said.

The Premier said he would ask the Ontario Legislature to set up the new corporation and call it "The Ontario Municipal Investment Corporation." It would be authorized to borrow up to $50,000,000.

Loans would not be made until projects for which they are designed are approved by the Ontario Municipal Board.

MARK HOLING THROUGH—On Aug. 29 the 5½-mile, 12-ft. dia. city tunnel for the water supply of Boston, Mass., was holed through. Representing the Boston Metropolitan District Commission at the ceremonies were, left to right, Karl R. Kennison, chief engineer; Max Uhlin, commissioner; and Jess R. Glaeser, project manager for Perini-Maney-Walsh-Rugo general contractors.

American Business Builds with INGALLS Steel

One fabricator, ONE PROFIT—a coordinated job from blueprints to delivery. Those were the advantages a large chemical company found when it employed Ingalls to build four chemical barges and the tanks required therefor (capacity 234,000 gallons each).

Chemicals, fuel, cement, grain—a mounting list of commodities are marketed more cheaply, thanks to the extremely low cost of barge transportation.

Follow the example of industry's leaders and call on Ingalls for whatever type of fabricated steel work you may require.

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Seattle Expressways

Construction of an elaborate expressway system, costing an estimated $35,000,000 over a 10-year period, is proposed for Seattle, Wash., by Traffic Engineer J. W. A. Bollong in his annual report to Mayor William F. Devin. More than half the cost could be obtained from state and federal funds, Bollong believes. He proposes a new north-south highway between Seattle and Everett and through Seattle, as well as three circumferential highways.

Municipal Windfall

Perryopolis, Pa., a Fayette County community of 1,500, has decided to spend a $1,320,000 bequest on a public works and improvement program that it hopes will triple its population within a few years. Given the money by Mrs. Mary Fuller Frazier, of Philadelphia, a former resident, the town will spend it as she specified in her will—half for permanent improvements and half for upkeep. A citizen's committee headed by Clifton E. Rodgers of Beaver Falls as planning consultant has allocated the money thus: Education center, $250,000; municipal building, $50,000; sewage disposal and water distribution system, $250,000; streets and highways, $82,000; street lights, $10,000; and shade trees and parks, $18,000. Approximately $50,000 is to be held in reserve until the projects are completed. A community hospital is considered. Rodgers proposes that about $700,000 be invested in local revenue-producing projects.

Mobile Docks

After two and a half years of building, the Alabama state docks at Mobile are now going into service. The first pier and warehouse have just been completed. Two other piers and warehouses will be put into service later this fall, increasing the berthing capacity of the terminals to 25 ships.

About $4,250,000 has been spent in building the piers, warehouses, rails, roadways and dredging. The city of Mobile contributed about $1,000,000 worth of waterfront property.

According to Docks Director Henry W. Sweet, the greatest needs for future growth of the port are deepening of the ship channel from 32 to 35 ft., its entire length to the Gulf of Mexico, and the equalizing of barge rates with New Orleans.

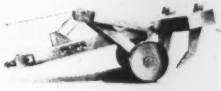
The city commission of Daytona Beach, Fla., has set in motion a $2,500,000 street paving program financed by a 10 percent utility tax and $50,000 a year from parking meters.

ONE COBRA LEADS TO ANOTHER!

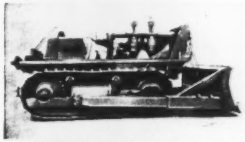
Recognized throughout the South as dirt-wise contractors, the Cherokee and Robert Lee construction companies know self-propelled earth moving equipment—know that profits depend on their having the best. Above, 200 hp Terra Cobra loads on Highway No. 1 near Aiken, S. C. "Machines perform very favorably" states Robert E. Lee, one of principal contractors.

Heaping loads like these helped contractors move 1,100,000 cu. yds. in a record time of 11 weeks. Terra Cobras carry 14 cu. yds. struck, 17.5 heaped. Cherokee Construction Company is an experienced Terra Cobra user. Their men can tell you how the time-tested and job-proved equipment, pioneered and backed by Wooldridge reliability, can pay off in extra yardage—and profits.

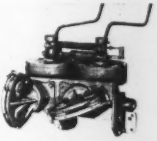
SCRAPERS: Boiling Bowl and Terra Clipper Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.



RIPPERS: Three models for extra heavy, standard or light duty.



BULLDOZERS and Trailbuilders for all standard makes of tractors.



POWER CONTROL UNITS. Two-drum winches for use with all standard tractors.

Three Terra Cobras paid off . . . . . so contractor bought five more!

"We originally purchased three Terra Cobras for our Clark Hill Dam job . . . and their performance was so economical that we have since bought five additional units; the Terra Cobra is rugged equipment which gets the job done," stated Mr. B. A. Jordan, Jr., President and General Manager of Cherokee, Inc.

This firm, together with Lee, Inc., recently used seven Wooldridge Terra Cobras to move a substantial portion of 1,100,000 cu. yds. in just eleven weeks during grading operations for the new four-lane super highway section of U. S. Highway No. 1, near Aiken, S. C. Production estimates showed average loads of 14 cu. yds., trip after trip. With machines operating on a 55-hour week schedule, Job Superintendent Alonzo Bailey stated, "Cobras will move more dirt with minimum down time."

Take a tip from the records of successful contractors like these. See your Wooldridge distributor or write today for complete details before bidding on your next job. Your order now will assure prompt delivery.

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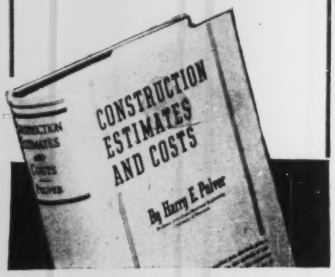

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Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Construction of Contracts

In construing the provisions of a contract, "the court does not merely go to the dictionary, but in giving effect to the language used by the parties considers what as reasonable men they intended or what provision as such reasonable men they would have made for the specific contingency which gave rise to the litigation, if the possibility that it would arise had occurred to them."[1]

Public policy requires that men of full age and competent understanding shall have the utmost liberty in contracting; and that contracts, when entered into freely and voluntarily shall be held good and shall be enforced by courts of justice. It is also axiomatic that the principle that contracts in contravention of public policy are not enforceable should be applied with caution and only in cases plainly within the reasons on which that doctrine rests.[2]

"It is a generally accepted rule that when a contract is to do a thing which cannot be performed without the violation of the law it is void: but when it may be performed lawfully, as well as in violation of the law, it is valid, in the absence, at least, of proof that the intention of both parties was that the law should be violated. The construction of a contract should be, when it is possible, in favor of its legality."[3]

A court in a recent decision made some important statements as to the principles that are to be applied in construing contracts.[4]

"There is ample authority to the effect that the main purpose of a contract is to be given effect if possible and that any minor and merely incidental provisions are to be construed so as not to defeat that purpose. Where a contract admits of two constructions, as in the instant cause, the general rule is that the court adopt that construction which is most equitable and which will not give to one party an unconscionable advantage over the other; and where the meaning is doubtful a construction which will entail a forfeiture should be avoided, especially where there is nothing in the language used which expressly requires such result.

"Furthermore, as stated in 12 Am. Jur., Section 241, one of the cardinal rules of construction of agreements is that the meaning should be gathered from the entire context and the language should be interpreted so as to subserve, and not subvert, the general intentions of the parties, and where a contract as a whole discloses a given intention and certain words or clauses would, if taken literally defeat the intention, they should be interpreted, if possible, so as to be consistent with the general intent."

(1) Reckler v. British American Assur. Co., 85 N.Y.S. 2d 183.
(2) Heraskovitz v. Todd Co., 85 N.Y.S. 2d 707.
(3) Shedlinsky v. Budweiser Brewing Co., 163 N.Y. 437, 57 N.E. 620, cited with approval in Siegert v. Taubman, 85 N.Y.S. 2d 724.
(4) Massasoit Housing Corp. v. Town of North Kingstown, 65 A. 2d 38 (Supreme Court of Rhode Island, March 31, 1949.)

Interpreting Specifications

Courts, in interpreting the plans, specifications and provisions which form part of the contract, must reconcile the various provisions where possible, so as to give effect to all and to construe the complete contract to carry out its dominant purpose. If two interpretations are possible, one which would lead to confusion, uncertainty or elimination of one of the essential parts of the contract, and one which would harmonize all provisions of the writings and make the contract complete, fair and usual, the latter interpretation should be preferred.[1]

(1) Vance v. Arnold, 201 P-2d 475.

Satisfying the Owner

Parties to a contract may lawfully stipulate that performance by one of them shall be fully satisfactory to the other.

Under such a contract, the party to be satisfied, is the judge of his own satisfaction, subject to the limitation that he must act in good faith.

The action in which this was brought out was begun to recover damages for alleged breach of a contract for drilling 20 natural gas wells. The contract permitted the cancellation of contract as to the wells not drilled, if the work was not satisfactory to the defendant. The court held that the evidence established a reasonable basis for dissatisfaction, justifying the cancellation of the contract.[1]

For other cases on this subject, see ENR Jan 6, 1949, p. 75.

(1) Coppinger v. Republic Natural Gas Co., 171 F. 2d 4 (U.S. Court of Appeals, Nov. 15, 1948).

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AMERICA'S STANDARD FOR OVER 25 YEARS

Elections and Activities

Gov. Elbert N. Carvel has named three more members of the Delaware Water Pollution Commission, completing the membership of that agency created at the 1949 session of the General Assembly. The new appointees are Lyman Cox, Wilmington, one year; W. Leslie Wheatley, Clayton, two years; and J. Reese White, Millsboro, three years.

George Carr, Norfolk, Conn., has been named chairman of the State Housing Authority to succeed Berkeley Cox, resigned. Fred L. Rice and Dwight E. Smith have resigned as members of the authority and are succeeded by Jere J. Flynn of the Hartford Accident & Indemnity Co., and Francis Ford, secretary of the Central Labor Union.

The Virginia Concrete Masonry Association has been formed with E. I. Boggs of Danville as president; Harry Wagner of Richmond, vice-president; and T. Grayson Shepherd of Richmond, secretary-treasurer.

The professional engineers of Newfoundland are establishing, at St. Johns, a branch of the Engineering Institute of Canada. Provisional officers for the branch have been appointed as follows: chairman, E. L. Baillie; vice-chairman Commander Geo. Desbarats; and secretary-treasurer, J. M. Hopkins.

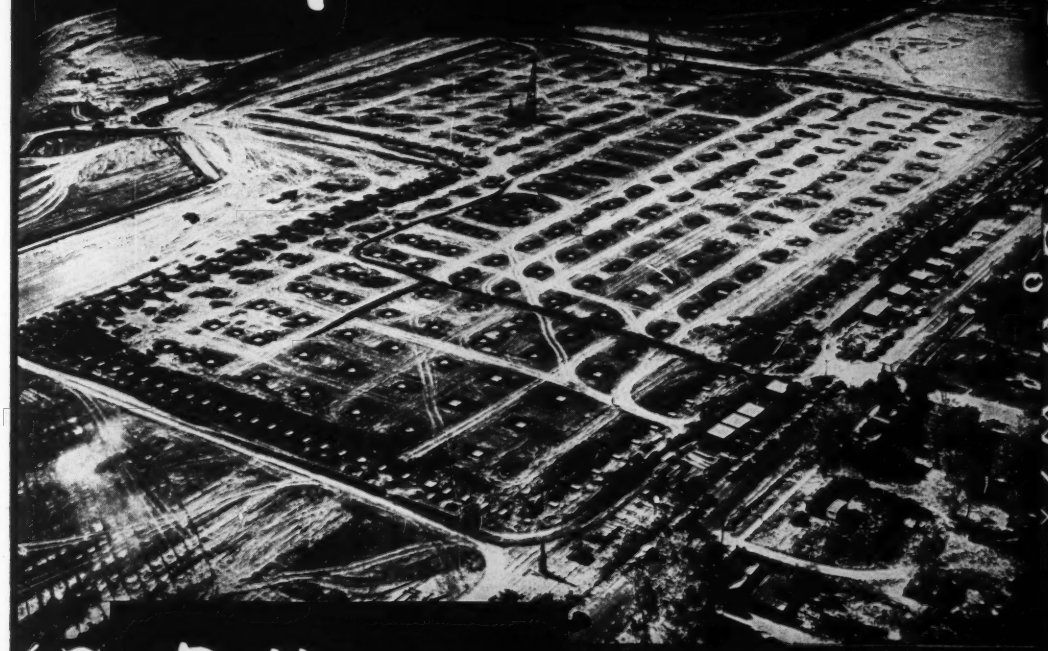
Members of the recently organized San Jose Chapter of the California Society of Professional Engineers have elected Walter A. Long, president; Harry Miller, vice-president; John MacDonald, secretary-treasurer; J. Winter Smith and George Thompson, executive committeemen and Paul Birmingham, chairman of the membership committee.

Members of the Montana Society of Engineers and the Montana branch, American Society of Civil Engineers, have proposed a meeting of all engineering groups in the state to consider means of improving their profession. At a meeting in Boulder, Mont., the two groups voted to have F. C. Gilbert of Helena appoint a committee to arrange such a meeting.

The new Arkansas post of the Society of American Engineers has 56 charter members. Its officers are: Col.

(Continued on page 59)

Raymond



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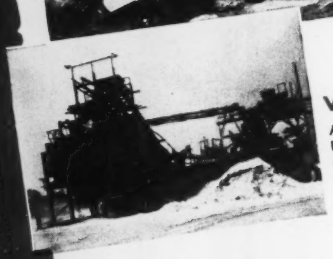
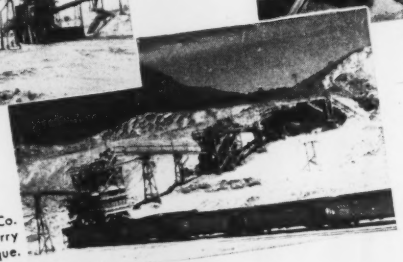


VIRGINIA
Arlington Stone Co., Leesburg, Va., produces crushed trap rock in 5 sizes to bituminous surfacing specifications.

OHIO
Camp Dennison, Ohio, all-Telsmith plant, one of six large plants of the Ohio Gravel Co., Cincinnati.

WASHINGTON
Alongside the Columbia River . . . crushing and washing plant of Howard Smith, Vancouver, Wash.

GEORGIA
Tyrone plant, Tyrone Rock Products Co. of Atlanta



WISCONSIN
Waupaca Sand & Gravel Co. plant, Custer, Wis., owned and operated by F. F. Mengel Co.

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Kenneth Newton, U. S. Army Engineers, president Walter Keith, Army and Navy General Hospital, Hot Springs, vice-president and James V. Simmons, bridge division of the State Highway Department, executive secretary and treasurer.

Walter Bearden of Asheville, N. C., has been named to head Construction Company 6-25 of the Organized Naval Reserve, just formed at Asheville. It includes five officers and 40 men who are either former Seabees or have civilian experience to qualify them for the CEC unit.

Governor Forrest Smith has named William C. Connett, St. Louis banker and chairman of the Bi-State Commission; Joseph A. McClain, Jr., chairman of the St. Louis Planning Commission, and Oliver Blase, Chairman of the St. Louis Planning Commission to serve as the Missouri commissioners in signing a compact for the creation of a Bi-State Development Agency to plan progress for the St. Louis metropolitan area in Missouri and Illinois. The agency will be empowered to plan, construct, maintain and operate bridges, tunnels, airports and terminal and other facilities and to establish policies for sewage and drainage of the area.

MAJOR MEETINGS

Federation of Sewage Works Associations, Hotel Statler, Boston, Mass., Oct. 17-20.

Metal Congress and Exhibition, also American Welding Society, Public Auditorium, Cleveland, Ohio, Oct. 17-21.

American Public Health Association, Hotel Statler and Hotel New Yorker, New York City, Oct. 24-28.

37th National Safety Congress, Stevens Hotel, Chicago, Oct. 24-28.

National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill., Oct. 26-27.

Engineers Council for Professional Development, Edgewater Beach Hotel, Chicago, Oct. 28-29.

American Institute of Steel Construction, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 31-Nov. 3.

Building Officials Conference of America, Wardman Park Hotel, Washington, D. C., Oct. 31-Nov. 4.

National Reclamation Association, Hotel Newhouse, Salt Lake City, Utah, Nov. 2-4.

American Society of Civil Engineers, fall meeting, Hotel Statler, Washington, D. C., Nov. 2-4.

National Council of State Boards of Engineering Examiners, Sheraton Plaza Hotel, Daytona Beach, Fla., Nov. 10-12.

National Association of Housing Officials, Hotel Statler, Boston, Mass., Nov. 13-16.

Subject:
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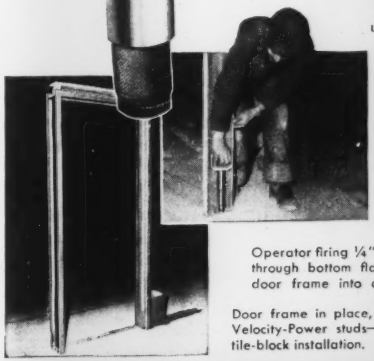
One of many applications: metal door frames, anchored with 4 studs to concrete in less than 5 minutes per frame! That's a typical performance record with the amazing M.S.A. Velocity-Power DRIVER—the *safety-engineered* powder-actuated tool that is revolutionizing stud-driving jobs throughout industry. Just load, position, and fire—stud is in place as easy as 1-2-3!

Only the M.S.A. DRIVER uses an integral stud-piston and cartridge assembly that prevents ricochet, flash, recoil and disturbing noise. Only the M.S.A. DRIVER is built by the world's largest manufacturer of industrial safety equipment. Write for the facts—ask for a demonstration!



Operator firing ¼" threaded stud through bottom flange of metal door frame into concrete floor.

Door frame in place, held by 4 Velocity-Power studs—ready for tile-block installation.

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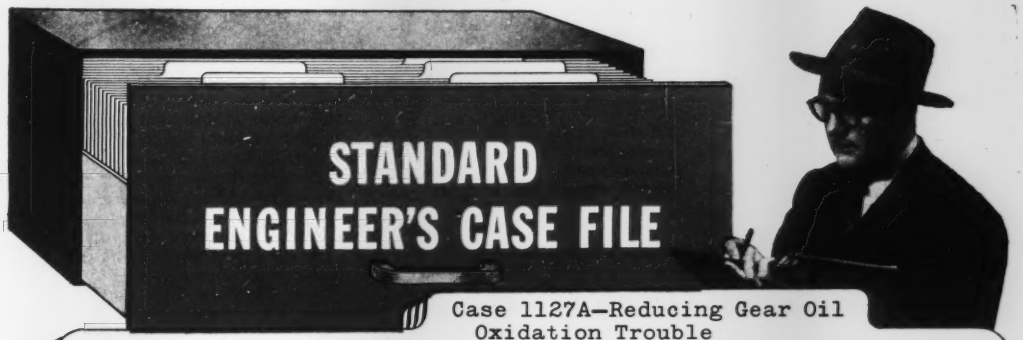
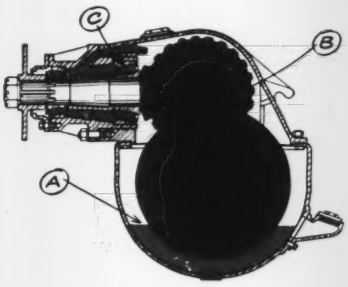


STANDARD ENGINEER'S CASE FILE

Case 1127A—Reducing Gear Oil Oxidation Trouble



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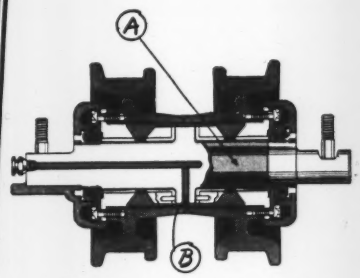
C. Will not corrode bronze bushings, bearings or other parts.

RPM Gear Oil contains a very effective foam inhibitor which prevents air bubbles from forming and building up pressure in cases. A low pour-point permits easy flowing in zero weather.

Case 1124—Maintaining Lubricating Film on Tractor Rollers



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A. Contains a highly effective chemical anti-wear agent.

B. Has new stringiness agent—resists extreme pressure and constantly changing shock loads, controls flow of lubricant through bearings and keeps film on bearing surfaces.

RPM Tractor Roller Lubricant is resistant to water and helps seals keep out grit and dust.

A special kind of this outstanding product, RPM Tractor Roller Lubricant A.C. Type is made for Allis-Chalmers tractors.

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EDUCATION and RESEARCH

Urge more industry funds for school research

Industry should provide $250 million a year for basic research by 1957 if it does not want the federal government to dominate that field, Linus Pauling, president of the American Chemical Society, said last week. The society held its fall meeting at Atlantic City, N. J.

Prof. Pauling, who is head of the chemistry and chemical engineering division at California Institute of Technology, said that the Steelman report of two years ago on protecting the prosperity of this country recommended that the federal government provide $250 million for basic research by 1957. At present, he added, about $81.5 billion is being spent on both research and development work in this country, but the amount for basic research has declined rapidly in the last few years. Prof. Pauling set the ideal amount at one percent of the national income.

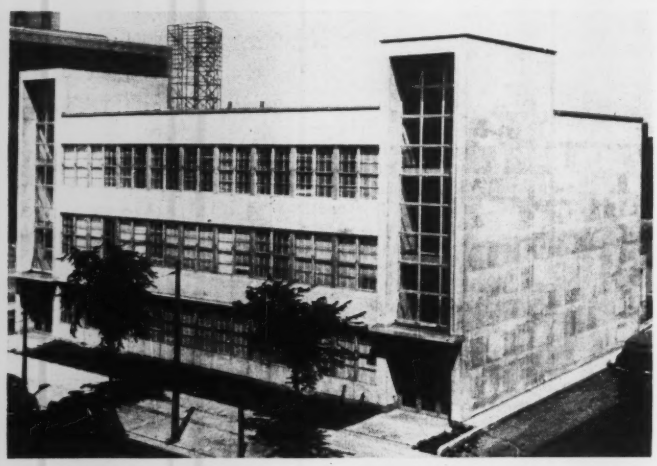
Basic research in laboratories of schools and universities is declining, Prof. Pauling said, despite grants-in-aid from such agencies as the Public Health Service and the Atomic Energy Commission. As to the privately supported colleges, it is chiefly these schools that he would like to see owned by private industry through the establishment of annual grants.

Chi Epsilon

Prominent engineers, professors of engineering and engineering students recently attended a celebration to honor installation of a chapter of Chi Epsilon, national honor civil engineering fraternity, at Manhattan College, N. Y. City. Brother Amandus Leo, dean of engineering at Manhattan, acted as host.

Harold T. Larsen, chairman of the installation committee of the fraternity, inducted 25 honor students. Assisting Mr. Larsen were Prof. Leslie W. Engler, school of engineering, College of the City of New York; Chilton M. Wright, dean of engineering at Brooklyn Polytechnic Institute; Richard R. Land, engineer-contractor; and Prof. C. J. Velz, head of the civil engineering department at Manhattan.

At an installation dinner, Mr. Larsen, a founder member of Chi Epsilon and editor of technical publications for the American Society of Civil Engineers, delivered the keynote address, challenging the new members to meet the fraternity's high standards. Brother Amandus Leo said the founding of the group at Manhattan culminated ten years' effort and thanked Frederick H. Zurmuhlen, Commissioner of Public Works for New York City; D. B. Steinman, and Arthur Sheridan, chief engineer for the Borough of the Bronx for their interest in the progress of Manhattan's engineering school.



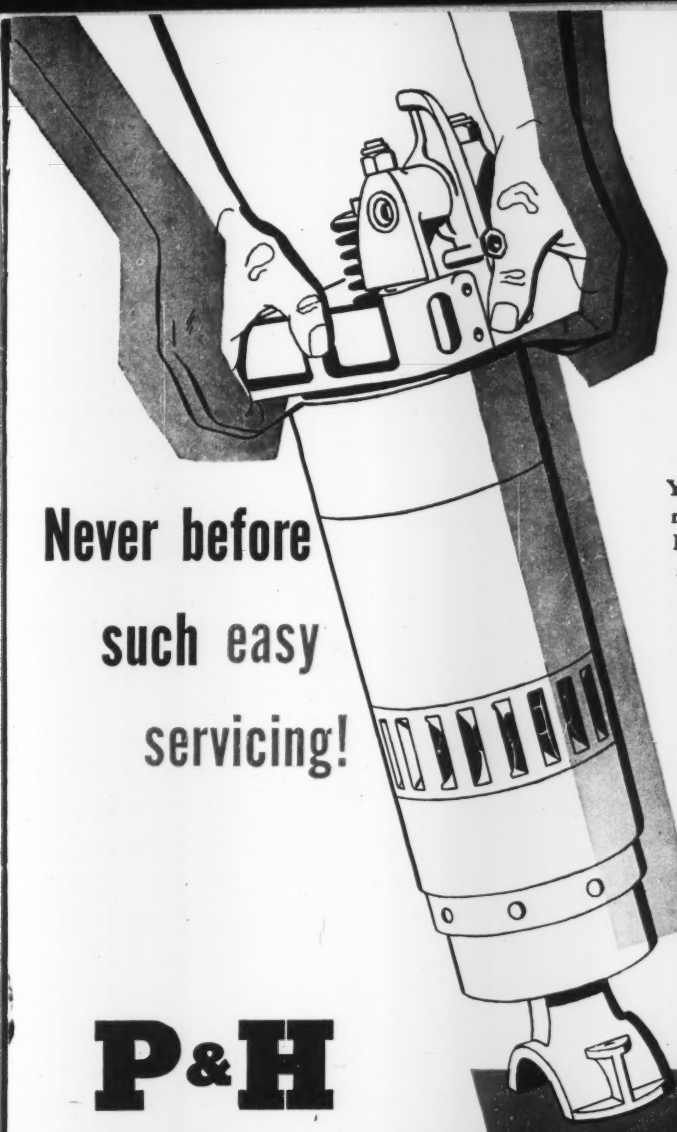
NEW ENGINEERING BUILDING at Fenn College, Cleveland, Ohio, costing $500,000, will furnish classrooms and laboratory for 375 students. The 3-story welded steel-frame building, with concrete slab construction and exterior trim of brick and Indiana limestone, contains 350,000 cu.ft. The ground floor, 100x99 ft. contains a 74x72-ft. industrial-type production laboratory, equipped with $100,000 worth of machine tools and metals casting, welding and quality control equipment. The second and third floors, 100x63 ft., contain offices and classrooms divided by enamel-coated, movable light-steel partitions to permit classroom expansion. It was designed by Charles Bacon Rowley and Associates, Inc., and constructed by Albert M. Higley Co., both of Cleveland. Sholto M. Spears is dean of engineering.

Faculty News

Marvin L. Grandstrom, who has been an instructor at the Case Institute of Technology at Cleveland, Ohio, has been appointed an instructor in sanitary engineering at the University of North Carolina school of public health, Chapel Hill, N. C.

Lynn S. Beedle, research engineer for the department of civil engineering at Lehigh University, has been granted a leave of absence to accept an invitation from Cambridge University, England, to coordinate liaison on studies being made at the two universities on the strength of welded steel frames and their components. The trip will be sponsored by the Welding Research Council and the Office of Naval Research in cooperation with the American Institute of Steel Construction, the American Iron and Steel Institute, and the Lehigh University Institute of Research. Beedle is expected to stay at Cambridge for three months to promote closer liaison between the investigation of structural members at the Fritz Laboratory at Lehigh and the study made by Prof. John F. Baker of Cambridge on the plastic behavior of welded rigid frames.

George Howe, former supervising architect of the Public Buildings Administration, has been appointed chairman of the Yale University department of architecture, effective Jan. 1 next, succeeding Harold D. Hauf, named editor-in-chief of "The Architectural Record". Mr. Howe is in Italy as achitectural adviser to the American Academy in Rome, and co-architect of the projected American Consulate at Naples. As head of Howe & Lescaze, Mr. Howe designed the 33-story Philadelphia Savings Fund Society building in 1932, the first air-conditioned skyscraper and a landmark in modern architecture.



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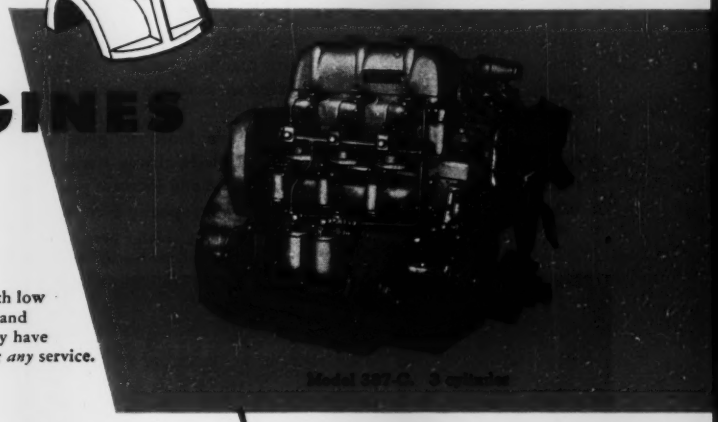

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Because THEY DO THE JOB
and STAY ON THE JOB!

OBITUARY

Willie E. Morgan, 61, retired building contractor, who entered the building business 41 years ago in Roanoke, Va., and built more than 500 houses there before going to Arlington in 1930 to continue building houses, died Sept. 18 in Manassas, Va.

Roscoe F. Houston, 64, vice-president of Robt. Young, Inc., New York City, died in Columbia, Mo., Sept. 8. He was a structural engineer and a graduate of the University of Missouri. For 20 years he had been with Geo. A. Fuller Construction Co., New York.

W. Chester Morse, 73, civil engineer and civic official of Seattle, Wash., died there Sept. 21. He had lived in Seattle since 1883, homesteading a place in the Cedar River watershed where was developed the water supply system he later headed. He was appointed city engineer in 1927. He also served briefly as City Light superintendent in 1931-32 and in 1938 became water superintendent, a position he had since held continuously. Mr. Morse was serving his fourth term as chairman of the Municipal Board of Public Works. He had been consulting engineer on many projects in this country and abroad, and attained prominence as an authority on earth movements and water works.

Isaac F. Stern, 77, Chicago consultant and long time member of the Illinois state board of examiners for structural engineers, died Sept. 10. An 1895 graduate of the University of Michigan, Mr. Stern was bridge engineer for the Chicago & North Western Railway at one time. In World War II he was consultant to the U. S. Navy on raising bridges in the Chicago area to permit large naval vessels built on the Great Lakes to transit the inland waterway to the Gulf of Mexico.

Gilbert W. Strode, 59, division engineer for the Jackson County, Mo., highway department, died at Grandview, Mo., Sept. 19.

Joseph B. Estabrook, 59, president of Hitchcock and Estabrook, Inc., consulting engineers, Minneapolis, Minn., died there Sept. 9. A graduate of Harvard, he was a first lieutenant in the Army Engineers Corps in World War I.

John H. Fitzsimmons, 68, a civil engineer, employed for 47 years with

(*Continued on page 68*)

To the man who thinks he needs a special building

These three types of Luria Standard Buildings can be adapted to meet practically every building requirement

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Clear-span, rigid-frame buildings — available in 40 to 100 foot widths

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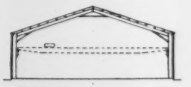

Clear-span, rigid-frame buildings, with crane runway. Available for 40 to 80 foot crane spans.

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That's why Luria can offer you a *permanent* building that will meet your exact requirements for so much less than you'd expect to pay. For complete information, send in the coupon below for a copy of our 20-page catalog.

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Sterling *Auger-Action* Rock Salt will not harm black top or brick pavements. NOR WILL IT HARM CONCRETE SLAB FOUR OR MORE YEARS OLD, NOR AIR-ENTRAINED CEMENT.*

*Authority: Portland Cement Association

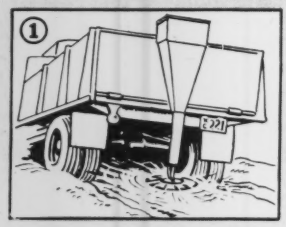
FAST

One truck of Sterling *Auger-Action* Rock Salt will cover 10-15 miles before reloading. One truck with abrasives will cover only 1½ miles before reloading. THUS SALT IS APPLIED IN 1/10th THE TIME OF ABRASIVES.

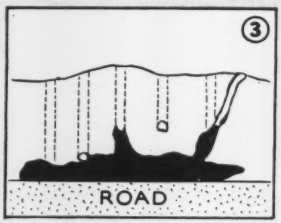
EASY

Sterling *Auger-Action* Rock Salt is easy to store. It can be used in any mechanical spreader. No vari-sized chunks. No freezing. LEAVES NO RESIDUE TO BE CLEARED FROM ROADS AND SEWERS!

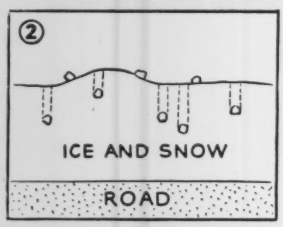
HOW STERLING *AUGER-ACTION* ROCK SALT WORKS



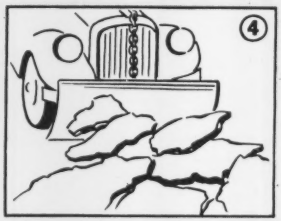
Sterling *Auger-Action* Rock Salt can be used in any mechanical spreader. Requires no special treatments.



Salt crystal reaches pavement . . . becomes brine. Brine BREAKS THE BOND between road surface and ice.



Each Sterling *Auger-Action* Rock Salt crystal bores a hole its own size in ice or snow.



Broken ice can be removed with one pass of plow or scraper. Heavy traffic spots clear themselves with passage of vehicles.

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EVERY DAY THIS WINTER AT ½ THE COST

Abrasive Chemical Methods—

WITH STERLING *Auger Action* ROCK SALT

ECONOMICAL

These are actual figures obtained from F. Ray Williams, Supt. of Highways, Saratoga County, N. Y.

COMPARATIVE COSTS OF PROTECTING ICY HIGHWAYS WITH TREATED SAND AND ROCK SALT

SAND MIXED WITH ROCK SALT:

Royalty	$ .10
Loading	.25
Haul, 5 miles at 8¢	.40
Piling with bulldozer	.15
Treating with salt at 50 lbs. per cu. yd.	.48
Reloading at time of storm	.25
Average haul, 10 miles at 8¢	.80
Spread	.10
Total cost per cu. yd.	$ 2.53
Use of 3 cu. yd. per mile at $2.53	7.59

STRAIGHT ROCK SALT:

CC Grade Rock Salt: (400 lb. per mile, computed for 5-ton load)	
5 tons of bulk salt at $12.95 per ton	64.75
Loading, 5 tons at 25¢ per ton	1.25
Average haul (30 miles at 8¢ per ton-mile) 5 tons	12.00
Spread (mechanical) 5 tons at $1.00	5.00
	$83.00
$83.00/5 ton per ton	= 16.60
$83.00/25 miles per mile	= 3.32

UNIT SAVINGS:

$7.59 cost per mile with treated sand

$3.32 cost per mile with Sterling Rock Salt

$4.27 SAVING PER MILE EACH ICING IN FAVOR OF ROCK SALT

Mileage of state highways in Saratoga County, N.Y.=216 miles

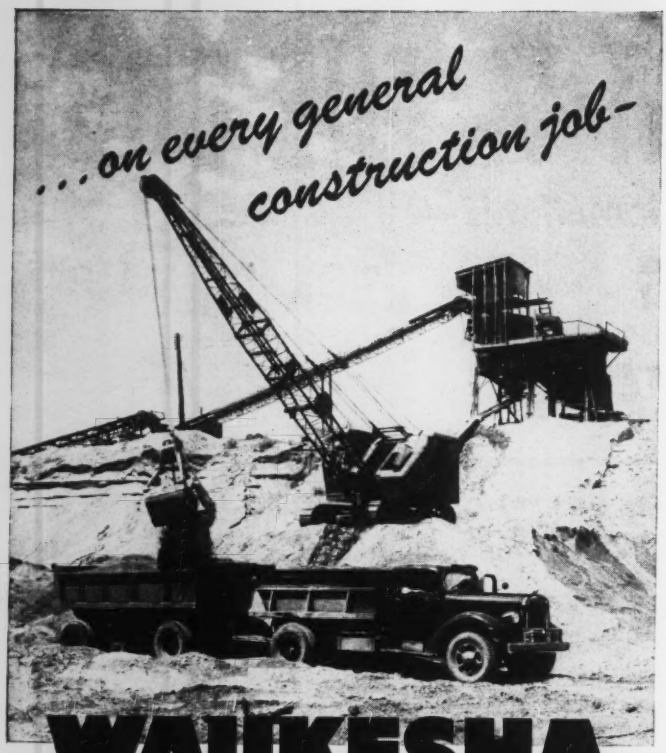
ESTIMATED SAVING EACH STORM=
216 x $4.27=$922.32

GET READY FOR WINTER—NOW!

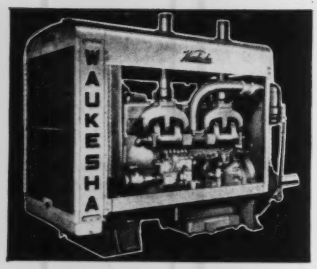
- Easy to store
- Comes in carloads, bulk, or handy 100 lb. bags

AUGER-ACTION ROCK SALT

INTERNATIONAL SALT COMPANY, INC.
SCRANTON, PA.



WAUKESHA
Diesel
POWER UNITS



WAUKESHA Super-Duty DIESEL (6-WAKDU)
six cylinders, 6¼-in. x 6½ in., 1197 cu. in. displacement, 210 hp. maximum

WHY are Waukesha Diesels so specially adapted to the general contractor's needs—for powering rock crushing, gravel screening-washing machinery, conveyors, shovels, cranes, pumps, mixers, pavers, hoists, and portable compressors and generators . . .

Outstandingly lively pick-up . . . quick response to power demand . . . high economy . . . ability to burn cleanly all modern "high speed Diesel fuels" of 45 cetane or above . . . starts easily . . . runs smoothly . . . maintenance is simpler and costs less . . . and Waukesha Diesels are easy to understand and operate. They range all the way from the small four-cylinder with a maximum of 29 hp., to the largest six-cylinder with its 357 hp. maximum. Bulletin 1418 tells you how Waukesha builds dependability into these Diesels—send for it.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

the Pennsylvania Railroad, died Sept. 14, at Philadelphia, Pa.

Robert B. Pemberton, 49, civil engineer for the Bureau of Reclamation, died Sept. 8 in Sacramento, Calif. A graduate of Oregon State College, civil and hydraulic engineering, and an employee of the federal agency since 1933, he went to Sacramento in 1946 from the Bonneville Power project in Oregon.

George A. Griffith, 66, retired Bureau of Reclamation building engineer, died Sept. 7 in Fresno, Calif. He helped build the Friant and Hoover dams and he was also active on the all American Canal.

Ellis L. Thompson, 48, administrative assistant at the Omaha, Neb., district office of the Corps of Engineers, died in that city Sept. 14.

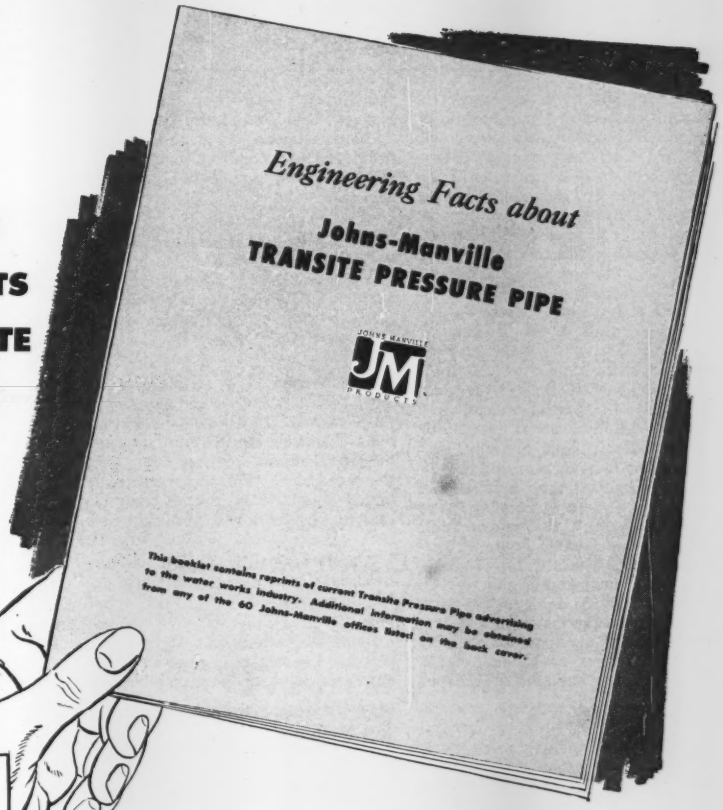
Robert S. Wheatley, 72, former Columbiana County, Ohio, engineer, and later East Liverpool city engineer, died Sept. 8 in Louisville, Ohio. He had been an Ohio State University instructor, a state mining engineer, and resident engineer for the state highway department.

John L. Henry, Sr., consulting engineer 47 years with the Rathbun-Jones Engineering Co., Toledo, Ohio, died Sept. 11.

N. Raymond Porterfield, 63, Youngstown, Ohio, vice-president and treasurer of The Porterfield-Binger Construction Co., died Aug. 25. His death breaks up a 37-year association with his partner, George Binger, in construction work. Mr. Porterfield was a specialist in bridge construction and design. A structural engineer, he was a graduate of the engineering school, University of Illinois, 1906. Prior to entering the contracting business, he was employed as assistant bridge engineer for the Delaware, Lackawanna & Western Railroad.

John A. Miller, Lt.-Col., U. S. Army Engineers, Reserve, of East Boston, Mass., died at Mobile, Ala., Sept. 10. A graduate in civil engineering from M.I.T., 1935, Colonel Miller was commissioned a captain in the Army Engineers, 1940, and assigned to the Alaskan Division, where he was on the Alcan highway work, later becoming staff officer in charge of general construction. He was in charge of rehabilitation of industries in the Rhine Province, the Saar, and the Ruhr, and in May, 1946, joined Hollingsworth & Whitney Co., Boston, as engineer on construction.

SEND FOR THIS DIGEST OF FACTS ABOUT TRANSITE PRESSURE PIPE


Engineering Facts about
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PRODUCTS
This booklet contains reprints of current Transite Pressure Pipe advertising to the water works industry. Additional information may be obtained from any of the 60 Johns-Manville offices listed on the back cover.

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A compilation of the advertisements in our current "Engineering Facts" series, it presents concise, factual information about Transite's many economic and engineering advantages . . . includes informative case histories that give a new perspective on how this asbestos-cement pipe meets today's requirements for a modern, efficient water carrier.

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Send me a copy of "Engineering Facts about Johns-Manville Transite Pressure Pipe" (TR-78A).

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EN-10

MEN AND JOBS

The Montana State Highway Department has been re-organized to promote greater economy. **Ray Percy** will be state maintenance engineer. District maintenance engineers will be **Don De Vore** at Great Falls, **Joseph Mulligan** at Butte, **L. R. Sampson** at Billings, **Bruce Randall** at Wolf Point, **H. H. Kuphal** at Missoula, **Fred Wells** at Kalispell, **Herbert Price** at Havre, **Oscar Ostenson** at Miles City, **A. E. Harcharik** at Lewiston, **George Barrett** at Bozeman and **W. K. Brittain** at Glendive. Division engineers are **Pete Spurzezm** at Kalispell, for the Kalispell-Missoula division; **Fred Quinnell** at Butte, for the Butte-Bozeman division; **Alec Middletown** at Havre, for the Havre-Great Falls division; **Jack McGhee** for the Lewiston-Billings division, dividing his time between the two districts; and **Frank Small** at Glendive, for the Miles City-Glendive-Wolf Point division. **George Poore** of Helena was named assistant state highway engineer for engineering and **W. O. Whipps** of Helena for administrative phases. **Martin Powers** of Helena, was named assistant maintenance engineer with headquarters at Helena. **E. B. Martin,** division engineer at Billings, was named construction engineer at Helena. **Cliff Thompson,** Great Falls division engineer, will go to Helena as reconnaissance engineer in charge of the preconstruction phase of highway work.

Russell Culp has resigned as city engineer at Garnett, Kan., to be sanitation engineer with the state board of health at Lawrence. While there he plans to work on his master's degree in sanitary engineering.

John Wakefield, of Jacksonville has been named director of the sewage and waste disposal division of the Florida State Board of Health, sanitary engineering division. He has been with the board since 1937 and recently obtained his Master of Science degree in sanitary engineering at Harvard.

Alex Lewis has been named administrative officer and city engineer for Marianna, Fla.

Alfonsan Burokas and **Algirdas Dirvianskis,** Lithuanian engineers and displaced persons, are now employed by the North Dakota state highway department, the former as a draftsman and the latter as a bridge designer.

Clyde Haberling, Stevens County engineer at Colville, Wash., for more than 40 years, has retired and has been succeeded by **John J. McInerny.** Heberling joined the department as a deputy and was elected engineer in 1911. McInerny, a graduate of Marquette, formerly was employed as area engineer with the General Electric Co. on the Hanford project.

O. R. Dinsmore, acting director of the Washington state highway department until the recent appointment of W. A. Bugge, has been appointed assistant director, while **Neil R. McKay,** with the department since 1937, has been named to the new position as assistant director in charge of state aid for county roads and city streets. Dinsmore has been with the department 22 years.

Joseph I. Perry, Indianapolis, veteran engineer with the U. S. Geological Survey of the Interior Department, has been appointed chief engineer of the Indiana Flood Control and Water Resources Commission effective Aug. 1, announced Anton Hulman, Jr., commission chairman.

Lt. Col. Chas. D. McDaniel has become executive officer of the Galveston, Tex., district of the Corps of Engineers. A bachelor of science from the engineering college of the University of Illinois, Colonel McDaniel in 1940 became a military instructor with the First Military District in Minneapolis, Minn. Later he served with the Puerto Rican Engineer district, the Antilles Engineer division, and the Fifth Army Engineer Headquarters in Chicago, Ill. He was in charge of the San Antonio sub-office of the Galveston district. He succeeds Lt. Col. Joe A. Clema, transferred to the Army's Command and General Staff College at Ft. Leavenworth, Kan.

G. G. Neff, recently of the Corps of Engineers, Denver district, has become executive officer of the Walla Walla district, replacing Lt. Col. V. Frisby, transferred to the operations division to take charge of utility relocation. Mr. Neff has been with the Corps for 20 years. He was graduated in civil engineering from the University of Wyoming in 1922. In 1928 he joined the Corps in the Kansas City district to work on surveys in the Missouri River Basin and was engaged in that work for many years. In 1943 he became chief of operations and engineering at Boston in the New England division, and later was district engineer in Providence, Rhode Island.

Col. Clark Kittrell, division engineer, Upper Mississippi Valley Division at St. Louis, Mo., who has served 32 years as a commissioned officer in the Corps of Engineers, has announced his retirement from active duty this fall, although he expects to remain active in the heavy construction field. He was graduated from the United States Military Academy in 1917, ranking tenth in a class of 142, and was appointed second lieutenant in the Corps of Engineers. Much of Colonel Kittrell's career has been devoted to heavy engineering construction in a large number of projects for the Corps of Engineers. He served in the Louisville, Ky., district on Ohio River lock and dam construction.

Ronald F. Scott, regional director of the Tennessee State Planning Commission, has been named director of the city planning department at Greensboro, N. C., succeeding **F. Stuart Chapin Jr.,** who has resigned to accept a faculty post at the University of North Carolina, Chapel Hill. Before joining the commission, he served as planning engineer for Superior, Wis., and as junior engineer for the regional planning of Milwaukee County, Wis. He holds degrees in civil engineering, geodesy and surveying from the University of Michigan and also studied at Massachusetts Institute of Technology.

Lowell F. Schaeublin, Columbus, has been named chief engineer and assistant director of the Ohio Highway Department, replacing **Samuel O. Linzell,** recently appointed Ohio Director of Public Works. Schaeublin has been with the department since 1925, beginning as an instrument man in Lima. Since January he has been chief engineer of maintenance. **C. W. McCaughey,** Columbus, has been named to succeed Schaeublin as chief engineer of maintenance and repair. He is a graduate of Ohio Northern University, Ada, and joined the state highway department in 1931.

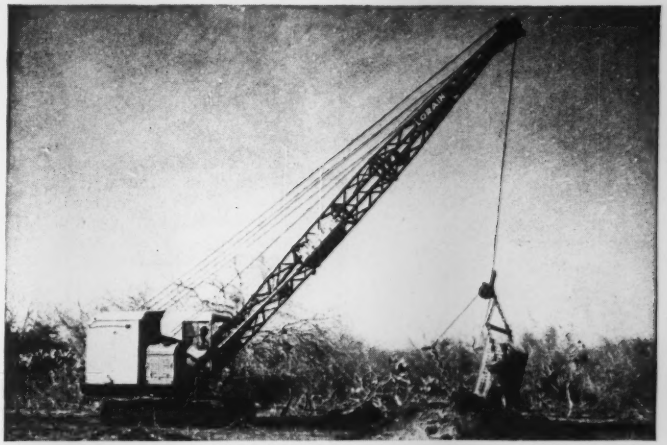
Claude R. Greiner, advanced architectural engineer for the Pennsylvania Department of Property and Supplies, has been named to the technical staff of the new General State Authority.

Marvin E. Ray has resigned as city engineer at Vancouver, Wash., to become city supervisor at Pullman, Wash. At Vancouver he supervised construction of the city's interceptor sewer project and the planning of the proposed sewage treatment plant.

Louis C. Milani, president of Hutchings & Milani, Hamilton, Bermuda, is a young American construction man who, in the last three years, has done some $8,000,000 worth of construction in Bermuda, including hotels, theaters, banks, industrial and government buildings.

Archibald Somerville, formerly district engineer for the Canadian Department of Transport, has been appointed city manager of Lethbridge, Alta.

George C. Long of Greensboro, N. C., who received his civil engineering degree from North Carolina State College recently, has been named assistant engineer of the city public works department at Greensboro.



A Kohler Electric Plant mounted on a dragline used by the Ballinger Construction Co., San Bonita, Texas, in clearing a farm for a large reservoir.

For night lighting on draglines, cranes, excavators, use

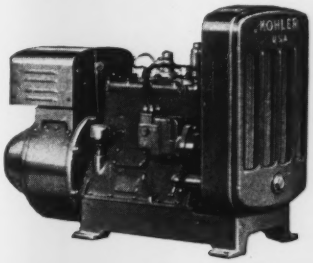
KOHLER

Electric Plants

Kohler Electric Plants have won widespread acceptance among builders and contractors in the construction industry as the most satisfactory source of current for numerous time-saving applications. Extensively used for floodlighting night operations, they help to meet or beat working schedules. They are efficient, convenient, reliable, for operating electric tools, pumps, compressors, and cooking appliances in crews' quarters, for floating equipment, and for jobs at isolated camps. Kohler units are easy to mount on dredges, excavators, draglines and can be moved on small trucks. They are self-contained, self-regulating, and will operate at capacity for long periods with little attention. Rugged, heavy-duty design makes them capable of meeting severe demands with minimum interruptions for maintenance or repair.

Kohler Electric Plants also fill important requirements for stand-by protection. In public or industrial buildings and in private homes, they assure uninterrupted operation of vital equipment when storms or accidents cause failure of central station electricity—thus protecting property and preventing much loss or injury.

Sizes range from 350 watts to 10 KW, with or without metal housing and skid base for portable use. Especially convenient for small power requirements are two new compact, lightweight models—one rated 350 watts, 115 volts, weighing only 70 pounds; the other a 500 watt 6-12 volt battery charging unit weighing 77 pounds. Write for illustrated folder D-8. Kohler Co., Kohler, Wisconsin.



Model 3A21, 3KW, 115 volts AC. Length 41", width 16", height 27¼".

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PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS

SPARLING MAIN-LINE METERS

Here are all the Answers →

YOU KNOW just how much water goes through a line, 2-inch or over, when it is Sparling-metered! Such knowledge is the basis of efficient operation.

The recorder shown is one of several types operated any distance away from the Sparling Meter. It duplicates the meter totalizer, indicates present flow-rate and records the day's or week's flows.

Accuracy within 2 per cent is guaranteed.

Bulletin 310 comes upon request. Quotations gladly given.

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Manufacturers of WATER MEASURING EQUIPMENT

Box 3277 Terminal Annex..... LOS ANGELES 54
1500 S. Western Ave..... CHICAGO 8
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726 Reserve Loan Life Bldg..... DALLAS 1

IF IT'S IRON OR STEEL

REMEMBER to have it HOT DIP GALVANIZED

(DIPPED IN MOLTEN ZINC)

"Hot-Dip" means actually dipping the steel in a tank of molten zinc. No other method of galvanizing will provide the fusion of metals and perfect seal necessary for effective rust prevention. You are assured a Hot-Dip Galvanizing job of the highest quality when you send your materials to a member of the American Hot Dip Galvanizers Association. For a list of members, write to the Association's headquarters in the First National Bank Bldg., Pittsburgh 22, Pa.

Charles J. Strandburg, 75, director of public works of Jamestown, N. Y., since 1940, has retired to go with the Daystrom Corp., at Olean, N. Y. Scheduled to retire on pension a year and a half ago, Mr. Strandburg has been granted three extensions by the New York State Board of Pensions. Each extension was requested by city officials.

Col. B. M. Harloe, Army district engineer in Hawaii since 1947, will be transferred Sept. 15 to the post of New England division engineer at Boston. **Col. Francis H. Falkner**, now district engineer in Pittsburgh, will replace Colonel Harloe in Hawaii.

Assignment of **Col. Charles G. Holle** as district engineer at New Orleans, La., has been announced by Brig. Gen. P. A. Feringa, President, Mississippi River Commission and Division Engineer at the Lower Mississippi Valley Division at Vicksburg, Miss. Colonel Holle has been engineer of maintenance of the Panama Canal for the last year. He succeeds Col. John R. Hardin, who is being assigned as division engineer of the Great Lakes Division at Chicago, Ill.

Norman Hill, with the Washington state highway department for 30 years until four years ago, has been appointed work control engineer. A graduate of the University of Washington, he has been a consulting engineer for the last four years. He succeeds **E. O. Simpson**, promoted to construction engineer.

Jess Comer is night superintendent on Merritt-Chapman & Scott's three deep-water piers, part of substructure work on the $27,000,000 high-level Mystic River bridge between Charlestown and Chelsea, Greater Boston, Mass. In 1930, fresh from inland Sedalia, Mo., Jess joined his present employer. He hasn't spent much time away from tidewater since.

(*Continued on page 75*)

GET THIS READY REFERENCE . . .

Here's the first edition of the Blasters' Handbook in eight years! 470 pages of up-to-the-minute information every blaster will want. Take a minute—now—to fill in the coupon . . . while you're thinking about it. The book's a complete guide to better blasting. Outlines approved methods. Completely revised . . . profusely illustrated . . . the new, 12th Edition of the Du Pont Blasters' Handbook is a handy, ready reference that describes preferred practices in blasting jobs of all kinds.

PACKED WITH INFORMATION . . .

This new handbook supersedes all earlier editions. New methods recommended are based upon new, practical field experience and the most efficient use of new, improved products. Chapters cover today's best methods for blasting operations. New charts . . . new tables . . . and an officially approved check list of safety measures . . . all provide new facts every blaster should have.

HELPS YOU DO A BETTER JOB . . .

Blasters everywhere . . . in every type of work . . . will find this pocket manual a big help. It answers their questions . . . helps solve blasting problems . . . aids in doing a better, more economical . . . more efficient job. Order *your* copy of this new, bigger and better edition of the Blasters' Handbook now. Mail the handy coupon.

Check this partial list of chapter headings . . .

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Coal Mines
Ore Mines
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Information Tables

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. . . THROUGH CHEMISTRY

LIMITED EDITION . . . ORDER NOW

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Gentlemen: Yes, indeed . . . I want a copy of the new, 12th Edition of the Blasters' Handbook. I enclose check ( ) . . . money order ( ) for ($) for which please send postpaid_____ copies at $1.50 each.

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FOR BIG OUTPUT ON WHEELS

Look into the New Bucyrus-Erie 22-B Transit Crane

Now you can get the 22-B on a big fast-moving new wheel mounting! That means speedy mobility plus famous 22-B output, dependability, and economy—the combination you need for fast profitable handling of scattered, diversified jobs.

Look over the partial list of important features that make the new 22-B transit crane outstanding among wheel-mounted machines. Ask your Bucyrus-Erie distributor for complete details today.

BUCYRUS-ERIE COMPANY • South Milwaukee, Wis.

Convertible—
- CRANE
- CLAMSHELL
- DRAGLINE
- SHOVEL
- DRAGSHOVEL

Check these Bucyrus-Erie Features:

- ✔ Bucyrus-Erie Wheel Mounting by Sterling.
  - 181" wheelbase.
  - 8'0" width over standard tires and guards.
  - 142 H.P. engine in wheel mounting.
  - 31 miles per hour.
  - Hydraulic booster for a steering gear (extra).
- ✔ Same basic upperworks as 22-B caterpillar-mounted machines.
- ✔ Full power-controlled boom and safety boom stops for lifting crane.
- ✔ New stronger crane type boom for crane, clamshell, or dragline.
- ✔ Booms 30 to 80 feet; lifting capacity with 40-ft. boom at 48° angle and 30-ft. operating radius, outriggers set—10,200 lb.
- ✔ New type 8- or 16-part boom suspension.
- ✔ Anti-friction bearings on all operating parts in hoist, swing, boom hoist, and crowd machinery on the main frame.
- ✔ Flood oil lubrication for transmission chain and all gears (except main swing gear and pinion).
- ✔ Interchangeable friction clutches and clutch parts for hoist, swing, crowd, propel.
- ✔ Reversible friction band linings — practically double lining life.

177E49

BUCYRUS ERIE

South Milwaukee, Wisconsin

Milton M. Kinsey, formerly president of the Board of Public Services of St. Louis, Mo., and formerly chief engineer of the Missouri Public Service Commission, has joined with **Harry C. Brockhoff,** formerly director of public utilities, St. Louis, to form Kinsey and Brockhoff, consulting engineers at 511 Locust St., St. Louis 1, Mo.

J. N. Wallace, president of the West Virginia section of the ASCE, has been appointed engineer in charge of the West Virginia road commission's District 6 office, Moundsville. He succeeds H. C. Bever, resigned. Mr. Wallace, a former commission district engineer has for the last several years been the West Virginia representative of the Koppers Co.

Kenneth K. Stowell has been named vice-president in charge of eastern operations for Griffels & Vallet, Inc., and L. Rossetti, consulting engineers and architects, Detroit, Mich. Mr. Stowell succeeds Edward X. Tuttle.

Rex Anderson, who has been employed at the Madison, Wis., district office of the Federal Public Roads Administration as planning engineer, has been chosen to succeed **M. B. Kinnikin** as district engineer in Richmond. Kinnikin has been transferred to the division office in Washington.

C. Martin Riedel, for 23 years engineer of waterworks design with the Bureau of Engineering, Chicago, has resigned. He will devote full time to Chemical Soil Solidification Co., Chicago, of which he is senior partner. The firm specializes in the chemical treatment of unstable soils to improve their bearing capacity and imperviousness.

Andrew J. Dennison is resigning as Newark, Ohio, safety director to become chief of operations of a new sewage disposal plant about to be opened there.

Edward X. Tuttle has been elected vice-president of Turner Construction Co. in charge of new business. He will supervise contract negotiations in the New York, Boston Chicago and Philadelphia offices.

Walter N. Frickstad, 70, city engineer of Oakland, Calif., has resigned after 19 years as head of the municipal engineering department. His successor will be **Charles A. Reed** who has been in the city engineer's office since 1911.

Only $2.98 helps put new "sell" in television advertising

Sponsor of television show had to refilm his commercials to meet a new selling problem. New films picked up at studio 4 P.M., delivered to TV station 800 miles away 8:47 P.M. same evening. Air Express cost for 11-lb. carton, $2.98. (In *undramatic* fashion Air Express keeps radio, television or any business rolling.)

Remember, $2.98 bought a complete service in Air Express. Rates include door-to-door service and receipt for shipment—plus the speed of the *world's fastest* shipping service.

Every Scheduled Airline carries Air Express. Frequent service—air speeds up to 5 miles a minute! Direct by air to 1300 cities; fastest air-rail to 22,000 off-airline offices. Use it regularly!

Only Air Express gives you all these advantages

Nationwide pick-up and delivery *at no extra cost* in principal towns, cities.

One-carrier responsibility *all the way*; valuation coverage up to $50 without extra charge. And shipments always *keep moving.*

Most experience. More than 25 million shipments handled by Air Express.

Direct by air to 1300 cities, air-rail to 22,000 off-airline offices.

These advantages make Air Express your best air shipping buy. Specify and use it regularly. For fastest shipping action phone Air Express Division, Railway Express Agency. (Many low commodity rates in effect. Investigate.)

SPECIFY AIR EXPRESS
AIR EXPRESS
GETS THERE FIRST

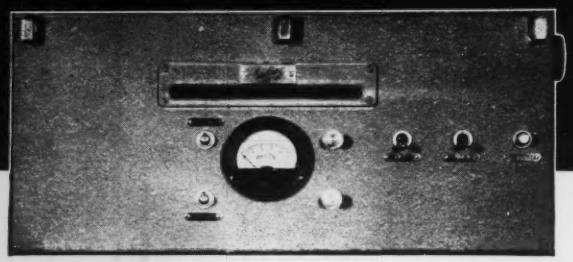
Rates include special pick-up and delivery door to door in principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE
SCHEDULED AIRLINES OF THE U.S.

Century

CONSTRUCTION SEISMOGRAPH

A low cost, portable refraction seismograph for civil engineering and allied industries.



The Century Construction Seismograph has been developed expressly for the civil engineering industry where information concerning sub-surface conditions is imperative.

The Century unit will give a fast, accurate survey to determine depth of bed rock below overburden; water table; width, depth and direction of old river beds; location and size of gravel deposits and other valuable information necessary for construction and excavation projects.

Unit can also be used for measuring vibration and for recording of natural frequencies of buildings, bridges, dams, etc.

Complete set of portable equipment consists of:

Century Seismometers
Century Cable and Reel
Century Amplifiers
Century Oscillograph
Century Daylight Developer

Write for Catalog No. 103

Century GEOPHYSICAL CORPORATION
TULSA, OKLAHOMA
EXPORT: 149 Broadway, New York

Mr. Frickstad will be first engineer of Joint Highway District No. 26 of Alameda and Contra Costa counties, where he will supervise construction of the new 10-mi. Mountain Boulevard Highway. Mr. Reed is a civil engineering graduate of the University of California.

Robert Jorvig, a member of the city planning board of St. Paul, Minn., will be loaned to the St. Paul Housing and Redevelopment Authority for three months to coordinate a city-wide housing program. Among the first projects will be the relocation of families displaced when tenements are razed to make way for the new capitol approach and state veterans' service building development.

Lewellyn Bromfield, Jr., who has been town engineer for Stamford, Conn., is now commissioner of public works in accordance with the plan which consolidated city and town governments.

Appointment of **Col. Arthur W. Pence** as Nashville district engineer of the U. S. Corps of Engineers is announced. He is being transferred from chief of staff at Ft. Belvoir, Va., to succeed **Col. Howard V. Canan,** who is being assigned as engineer for the Second Army at Camp George Meade, Md. Colonel Pence was commissioned in the Corps of Engineers in 1918 upon his graduation from the U. S. Military Academy, where his standing was third in a class of 227. During the war he spent two years in Europe as deputy chief engineer at Headquarters of the Services of Supply in the United Kingdom, engineer officer of the Mediterranean Base Section in North Africa, and commanding general of the Peninsular Base Section in Italy. Returning to the United States in 1944, Col. Pence was for two years director of service instruction at the Command and General Staff School at Ft. Leavenworth. During the next two years he was commandant of the School of Logistics at the same post. In July, 1948, he was appointed to Ft. Belvoir.

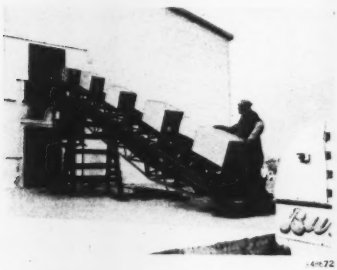
Col. Conrad P. Hardy who has been in Germany since August, 1946, has been assigned district engineer at Pittsburgh, Pa., to be responsible for the U. S. Army phase of river, harbor and flood control work, as well as the construction of veterans' hospitals. His Army service began in 1917 and he has been an Engineer officer since 1918. In 1946 he was awarded the Legion of Merit for his work as district engineer for three years in the Seattle, Wash., Army area.

★★★★ **Barber-Greene** ★★★★

PRTD. IN U. S. A. B-G COST-SAVING BULLETIN No. 4905 12SM-AM-7-49

"MILLION DOLLAR PLANT" FEATURES OUTSTANDING BELT CONVEYOR SYSTEM

Simple Conveyor Proves Ideal "Second-story Man"



B-G Reversible Flat Belt Conveyor solves awkward package handling problem.

Moline, Ill.: — Getting a variety of packaged goods — sacked cement and lime, kegs of nails, bagged insulation, furniture and hardware—into and out of the second story of their warehouse was a problem that caused Moline Consumers Company to call in its local B-G distributor. The simple, low-cost solution is shown above — a B-G Flat Roll Belt Conveyor, adaptable to both inclined and horizontal use, and equipped with a serrated belt to grip smooth packages and prevent slipping.

Important to the success of this conveyor is the fact that it is powered by a reversible 5 h.p. motor. Thus, it acts both as an unloading and loading unit — from dock to warehouse, from warehouse to dock.

Uses 15 B-G Conveyors to Move Sand and Gravel from Pit to Dock

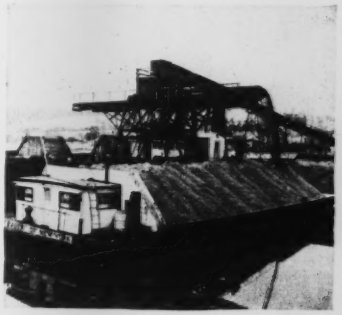
Port Washington, N. Y.:—The aggregate industry, widely noted for its large scale and efficient use of belt conveyors, offers few examples more outstanding than the Port Washington plant recently purchased by Colonial Sand Company. Designed by Merritt, Chapman and Scott Company, this million-dollar, all steel and concrete plant has had notable success in cutting the cost of moving material from pit to plant to loading dock.

High Capacity Conveyor Setup Is Flexible, Semi-Portable

Three thousand feet of B-G Conveyors—fifteen units in all—underlie the high capacity of this plant and provide the flexibility required for changing setups and relocating conveyors as the need occurs.

In contrast to rigidly permanent conveying setups, the B-G Conveyors are made up of standard "packaged" units with a high degree of interchangeability that simplifies assembly and disassembly for lengthening, shortening or relocating on the job.

Three field conveyors, fed by electric shovels, feed the field hopper, and another conveyor carries material to a crusher-scalper unit. From here, via six other separate conveyors, material is scrubbed, screened, separated and stockpiled. A B-G Radial Stacker is used to stockpile sand only. From storage, a 682-foot conveyor carries materials under a roadway to a nearby dock where they are loaded onto barges by a B-G Dock Conveyor, and shuttle-type barge loading conveyor.



Loading barge at Port Washington plant. Shuttle conveyor permits loading barges on either or both sides of the dock.

Foundry Eliminates Costly Hand-Loading of Heavy Material

Chicago, Ill.:—There's a fine example here in the Pyott Foundry of how easily and simply a single short B-G Belt Conveyor can replace hand methods and cut costs to rock bottom. This company had installed a briquet-making machine to reclaim cast iron borings and turnings, for final re-use in its own furnaces. Loading this heavy material into the 12-ft. high hopper was far too costly and inefficient when done by hand—a back-breaker, at best.

So, a lightweight, low-cost 36-ft. B-G Permanent Conveyor was installed to do the job. Equipped with a small three-sided loading hopper at the foot end, it takes scrap brought from the foundry in hand wheelbarrows, and elevates it to the briquet machine hopper at the touch of a button.

Effective use of simple B-G Conveyors is one way in which plants of all types are minimizing the expense of moving all sorts of bulk and packaged materials. Volumes do not have to be large to justify their low cost. This job involves only four or five tons per day, which could not be handled so efficiently with any other method.

(See photo below)

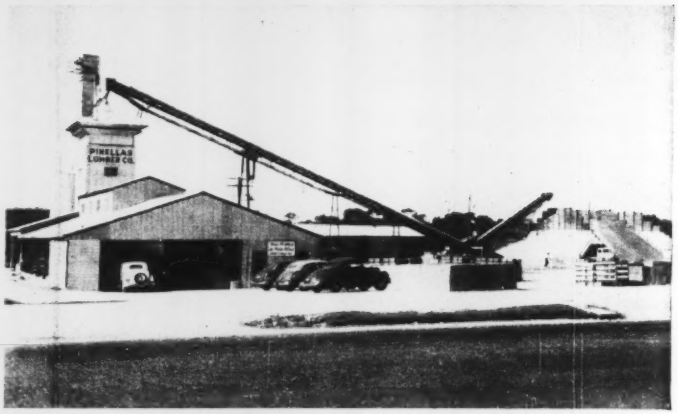
14-652

B-G Belt Conveyor economically elevates heavy scrap material.

Doubles Capacity, Lowers Cost with B-G Conveyor

Punxsutawney, Pa.:—Increased unloading capacity and lower maintenance cost were the objectives when the Kurtz Coal, Lumber and Building Supply Co. here decided to replace a vertical bucket elevator with a single 175-ft. B-G Permanent Belt Conveyor.

To date, over 250 cars of 1-inch and 2-inch stone have been unloaded and over 12,000 tons of stone unloaded and stacked. The final result: Plant capacity doubled, and not a cent for repairs.



4749

Order and efficiency are reflected in the clean lines of this compact yard.

Ready-Mix Plant Simplifies Unloading and Storing Operations

Costly, Complicated Equipment Eliminated by Radial Stacker and Conveyors

St. Petersburg, Fla.: — Operators of the Pinellas Lumber Company, progressive local cement block and ready-mix plant, look with satisfaction on their profit-making aggregate-handling belt conveyors. Where before there was a complicated system of shuttle and tripper assemblies — costly to operate and maintain — now a simple B-G Radial Stacker and four economical B-G Permanent Conveyors have taken over.

For surge capacity, about 2500 tons of aggregate are kept available. This is received in hopper bottom cars and discharged onto a 12-ft. feeder conveyor which in turn discharges into a 48-ft. permanent conveyor at right angles to the feeder. This conveyor supplies the 78-ft. radial stacker which is mounted on railway wheels running on a rail on a low concrete structure.

Thus a kidney-shaped pile of aggregate separated into four compartments is always maintained. This pile covers an 80-ft. tunnel conveyor, fed by eight gates, which supplies the 201-ft. mixing and batching conveyor.

Radial stockpiling of bulk material, a B-G development, has many advantages: It minimizes space required for storing several classes of material, it facilitates quick and easy reclaiming and requires a bare minimum of manpower.

Four-Flight Conveyor Replaces 6½ Miles of 6% Grade Track

Roanoke, Va.: — For years, the Blue Ridge Stone Corp. has used six railroad locomotives to haul limestone from the quarry three-quarters of a mile to the processing plant. This required 6½ miles of track and negotiating a 6% grade. Now a four-flight B-G Belt Conveyor is doing the job at a 350 tons per hour clip, and further improving operations by maintaining a 24-hr. stock pile at the plant. The first three flights of the system haul stone from quarry to stock pile. The fourth delivers from stock pile to plant. Here 3,798 ft. of B-G Conveyors replaced far more costly and far less efficient equipment.

B-G Radial Stacker Solves Asphalt Problem

Thornton, Ill.: — Highly portable B-G equipment accomplished results normally achieved only by costly permanent units for the Gallagher Asphalt Company. For a bituminous resurfacing contract, the company had to unload the stock pile well ahead—over 53,000 tons of aggregate. A B-G Radial Stacker, fed from a B-G Belt Feeder, unloaded and stored up to 24 cars per day. Storage was over two steel tunnels each equipped with a B-G Belt Conveyor, one for sand and one for stone. Reclaiming the proper combination via these conveyors was simple and inexpensive. Typical of B-G standardized design, these conveyors are easily dismantled and reassembled for relocation and re-use on other jobs.

ECONOMICAL TWO-MAN OPERATION IN THIS 150 FINISHED TONS PER HOUR OHIO PLANT

B-G Conveyors, Crusher and Bucket Loaders Provide Required Flexibility for Job

Wapakoneta, Ohio:—Two men are all that are required to handle the extensive operations of the Wapak Sand and Gravel Company near here. This plant covers 80 acres, yet the one dragline operator and the one supervisor at a central control panel which operates the five B-G Conveyors, Feeders and Crushers, keep the entire operation going.

A fine example of efficient layout, the plant is set up ideally to minimize machine and man-hour requirements. The $1\frac{3}{4}$-yard dragline at the pit loads a surge hopper over the first B-G Conveyor which feeds the B-G Ebersol Crusher. Another B-G Conveyor carries the aggregate from there to the main plant. After processing, the material is delivered to one of three 78-ft. B-G Radial Stackers which stockpile sand and gravel separately.

All material is loaded from the stock piles by two B-G Loaders — one pneumatic-tired and the other crawler-mounted.

Operating at a capacity equal to many plants equipped with extensive and permanent installations, this plant has actually no permanent construction other than the small footings under the radial stackers and the screening machinery. The B-G Conveyors are easily moved, relocated, lengthened or shortened. A spare swing conveyor is kept on hand against the time when the excavating must be further away from the plant. Thus the whole operation is on a flexible and highly efficient basis.

84378

General view of Wapak Sand and Gravel Co. setup illustrates modern aggregate production at its best; continuous flow of material is maintained at low cost through use of B-G Belt Conveyors and Barber-Greene Ebersol Crusher.

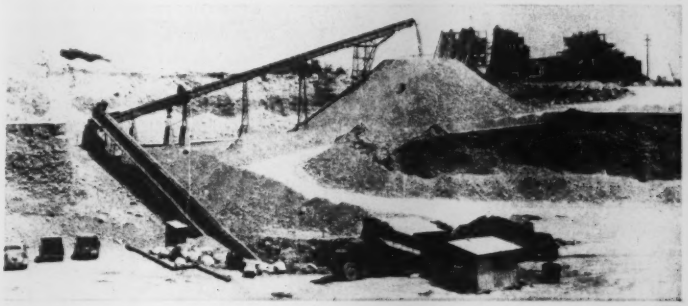
Barber-Greenes at Azuza Make Show Place for Industry

Considered to be one of the showplaces in the industry, the Azuza Rock and Sand Company's plant represents an ideal use for belt conveyors, as built by Barber-Greene to the exacting specifications of the company's management. For more than a thousand feet the pit-run aggregates are brought by belt conveyor from deposit and lifted 175 ft. to plant. Push-buttons start and stop equipment in proper sequence.

Three B-G Standardized Truss Conveyors supply the operation. In unit one of the plant a 36-in. Conveyor, 300 ft. long, carries material from the primary crusher to a 36 in. x 200 ft. B-G Stacker Conveyor, which builds the 7,000-ton live surge pile. Running from a 120-ft. concrete tunnel beneath the surge pile, a 36 in. x 518 ft. B-G Conveyor is synchronized to feed the washing and processing tower, which operates independent of unit one.

The 450 tons per hour capacity of this B-G equipped plant is great by any standard. Fifty dump trucks and 17 ready-mix trucks are kept busy distributing this plant's products in addition to the bulk of the production, which goes out by rail.

84373

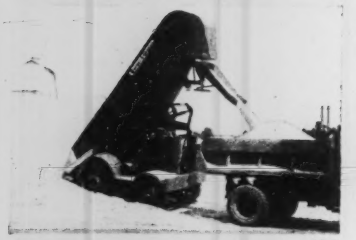


84292

General view of Azuza Sand and Gravel Plant, showing two of the three B-G Conveyors, which maintain the raw material supply for the 450 tons per hour finished production.

THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:



847331

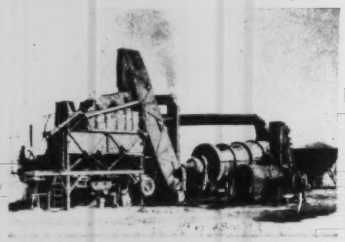
B-G BUCKET LOADERS: Crawler or pneumatic tire mounted. For low cost truck loading of bulk materials.

846389

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" to 24" wide and to 8' 3" deep.

847550

B-G PORTABLE CONVEYORS: For moving all bulk materials and packaged goods. Variety of lengths, belt widths and capacities. Electric or gasoline power.

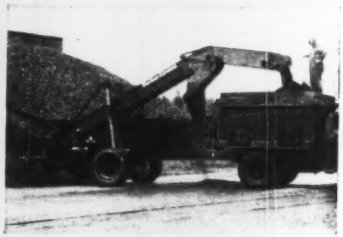


846708

B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 t.p.h.

847350

B-G FINISHERS: Automatically place smooth, compacted surface regardless of variations in subgrade.



846434

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

Use Barber-Greene's 30 Years of Experience to Help You Plan Your Job. It can be Valuable and is at Your Service

It always pays to eliminate guesswork. Barber-Greene offers you the benefit of over thirty years' experience in designing and building equipment proved year after year on jobs—and in industries—like yours. Barber-Greene's Representatives are material handling specialists with practical experience in successfully applying the right machine to jobs like yours. Consult your Barber-Greene Distributors, or write directly to Aurora, Illinois, for information you need to do your job most profitably.

Barber-Greene Company
Aurora, Illinois, U.S.A.
Cable address "Bargreene"

Send information as indicated:

( ) B-G Permanent Conveyor of _____ t.p.h. capacity for moving _____ material a distance of _____ ft.

_____

_____ other specifications

( ) Information on _____ other B-G equipment

( ) Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

About October 20

Ark., Yellville—City, water distr. sys., etc. $90,000. Max A. Mehlburger, Pyramid Bldg., Little Rock, engr.

October 20

Tex., Colorado City—City, Fred M. Boone, mgr., Colorado City, WW imprvs., filter plant and pump station at Lake Colorado City, supply line from S. Colorado City Pump Station to filter plant to Colorado City, pumps, motors and 500,000 gal. elevated steel water tank. $425,000. Plans deposit $25. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 4/28.

October 21

Tenn., Dyer—City, City Clk., WW imprvs., incl. 100,000 gal. elevated water tank. Russell & Axon, 408 Olive St., St. Louis 2, Mo., engrs.

October 26

Wis., South Milwaukee—City, filtration plant addn., incl. circular up flow desludging basin, 2 rapid sand filter pumps, chemical storage and feeder bldg. Plans deposit $20. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago 11, Ill., engrs. CD 2/8/45.

November 8

●**Ill., Decatur**—City, City Hall, watermain extens., large feeder mains, imprv. water pump. station and water filtration plant, repairing concrete impounding dam and converting steam pump sys. to electric pumping, 1½ m.g., tank on tower, $1,600,000. Warren & Van Praag, Inc., 253 S. Park St., engr. CD 1/19.

Bids Asked

Tex., Baytown—B. S. Sturman, 204 Winkler Dr., and H. A. Crabb, Southern Standard Bldg., Houston, waterlines, facilities in area of Wynnewood Addn. $40,000.

Tex., Houston—J. Dealy Smallwood, Citizens State Bank Bldg., c.i. waterlines, facilities, Chocolate Bayou Rd. area. $50,000.

LOW BIDDERS

Mich., Detroit—State Hy. Dpt., 429 State Office Bldg., Lansing, 30 in. normal pressure main, 16 and 12 in. high pressure main, concrete tunnels and shafts to house mains, from Macine Constr. Co., 23170 Schoenherr Rd., East Detroit, **$234,961**, 13 ft. diam., tunnel, 224 lin. ft. concrete tunnel 10 ft. inside diam., 66 in. watermain, from J. T. Poupore Co., 12230 Freud St., **$192,839**. Harry C. Coon, 424 State Office Bldg., Lansing, engr.

●**N. M., Albuquerque**—U. S. Eng., P. O. Box 1538, Sept. 22, water supply, incl. pump. station, electric transmission line, related facilities, Serial No. Eng.-29-005-50-14, from L. C. Peddicord, 815 E. Coal St., **$101,987**. Est. $100,000. CD 9/8.

N. Y., Sonyea—Bureau Contrs. & Accounts, Albany, Sept. 28, replacing standpipe, West Group, Craig Colony, from Thomas H. Maxwell, 480 Levington Ave., New York, **$30,403**. CD 9/22.

O., Toledo—City, rejected bids Sept. 13, 24 in. watermain from Oaksale St. and E. Broadway to Oak St. and city limits (East Toledo) LB **$36,690**. CD 9/22, under LB.

CONTRACTS AWARDED

Ala., Red Bay—City, WW imprvs., to Weaver Constr. Co., Gadsden. **$54,083**. Bids 9/27. CD 9/13.

Tex., Elsa—City, 6 and 8 in. c.i. waterlines, Purchase and Hire. **$30,000**. CD 10/2/47.

B. C., Victoria—Greater Victoria Water Bd., Victoria, supplying 6,000 ft. 36 in., 16,000 ft. 39 in. and 13,200 ft. 48 in. steel pipe, to Victoria Machinery Depot Co., Ltd., 33 Dallas Rd., **$634,000**. Bids 8/31, awarded 9/28. CD 8/1.

N. W. T., Fort Smith—North West Territories Council, Ottawa, Ont., 25,000 gal. heated reservoir with chlorination plant and 12 fire hydrants, day labor. **$50,000.**

SEWERS, WASTE DISPOSAL

BIDS ASKED

October 17

N. Y., Port Chester—D. A. O'Connell, village clk., Police Headquarters Bldg., 350 N. Main St., Contrs. 1A and 1B, refuse incinerator plant, Contrs. 2, 3 and 4, heating, plumbing and electrical sys. Plans deposit $5; adv. ENR 9/29.

Ont., Chapleau—J. R. Serre, clk. Town of Chapleau, laying approx. 4½ mi. sewers and house sewer connections, 2 small pump houses. Approx. $200,000. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 3/4.

October 20

Kan., Olathe—Mission Valley Sewer Dist., c/o Payne & Brockway, engrs., Olathe, sewerage sys., appurtenances. $50,000. Extended date. CD 8/15.

Wash., Spokane—City, City Hall, constr. Division F (Chestnut St. Section) intercepting sewerage sys. $536,750. Plans deposit $10. C. E. Davis, city engr. CD 6/14/46.

October 24

Kan., Cherryvale — City, Mrs. Ellen Schlehuber, clk., sewage treatment plant, incl. lift station, final tank, digester, sludge beds and aeration pond, etc. Plans deposit $20. The Ediger Eng. Co., 252 Laura Ave., Wichita, Zone 7, engrs.

Kan., Pittsburg—At Office Agnes M. Young, city clk., Pittsburg, sanitary sewer mains. Plans deposit $5, $2.50 will be refunded. Wilson & Co., 223 N. Santa Fe St., Salina, engrs. CD 12/13/44.

October 25

Tex., Forney—City, sewage treatment plant, $50,000. H. B. Gieb & Assoc., 1207 Texas State Bank Bldg., Dallas, engrs.

October 26

California—State Div. Hys., P. Wks. Bldg., Sacramento, drainage sys. at White Creek about 16 mi. north of San Simeon, Monterey Co. G. T. McCoy, Sacramento, state hy. engr.

Calif., Los Angeles—Los Angeles Sanitation Dist. 2, 1206 Maple Ave., 3 mi. 18 in. pipe, Downey Ave. Extension Trunk Sewer, in Hynes. Approx. $100,000. A. M. Rowan, engr.

November 1

Calif., Turlock—City, City Hall, industrial waste disposal project, Approx. $50,000. Plans deposit $20. W. F. Wooley, City Hall, city engr. Harry N. Jenks, 63 Crescent Dr., Palo Alto, engrs. CD 8/20/48.

November 2

●**W. Va., Clarksburg**—City, Contr. 1, intercepting and branch sewers, West Fork Sect., Contr. 2, intercepting and branch sewers, West Fork Sect. to Elk Creek; Contr. 3, intercepting and branch sewers, Upper West Fork Sects.; Contr. 4, intercepting and branch sewers, Tower Elk Creek Sect.; Contr. 5, intercepting and branch sewers, Upper Elk Creek Sect.; Contr. 6, sewage treatment plant; Contr. 7, plumbing; Contr. 8, heating; and Contr. 9, electrical work. Approx. $3,000,000. Plans deposit $50. Chester Engineers, 210 E. Parkway, Pittsburgh, Pa., engrs. CD 8/9.

November 7

Minn., Moorhead—City, P. A. Cook, clk., City Hall, Sect. 2, addns., remodeling Sewage Pumping Station 2, construction Sect. 3, water treatment plant imprvs. $350,000. Plans deposit $25. W. C. Larson, Detroit Lakes, engr. CD 7/27, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Bids Asked

Tex., Baytown—B. S. Sturman, 204 Winkler Dr., and H. A. Crabb, Southern Standard Bldg., Houston, sanitary and storm sewers in area of Wynnewood Addn. $75,000.

Tex., Houston—J. Dealy Smallwood, Citizens State Bank Bldg., sanitary sewers, Chocolate Bayou Rd. area. $60,000.

LOW BIDDERS

Fla., Tampa—Bd. Representatives, City of Tampa, Tampa, sewage treatment plant, Group 4, from Lewis & McDowell, Inc., 285 Madison Ave., New York, N. Y., K-2, **$119,746**, K-3 **$108,739**; river and channel crossing, Group 3, from Boyce Co., 604 Pennsylvania Ave., Clearwater Fla. and Bay Dredging & Constr. Co., Oak and River Sts., B-1 **$52,863**, and B-2 **$12,185**. CD 8/18.

Mass., Lawrence—City, City Hall, Sept. 26, refuse incinerator, from Morse Boulder Destructor Co., 205 E. 42 St., New York, N. Y., **$548,446**. CD 8/29.

Mich., Detroit—Dpt. P. Wks., relief sewer line, from Geo. Odien, Inc., 1935 McGraw St., **$49,883.**

N. Y., Yonkers—City, City Hall, Aug. 31, incinerator plant, from Foirier & McLane Corp., 1010 Nepperhan Ave., **$966,815**. CD 8/3.

Tex., Kermit—City, Sept. 26, sanitary sewerage sys., imprvs., extens., from M. & N. Constr. Co., Hobbs, N. M., **$59,000**. CD 9/14, under LB.

Tex., Rogers—City, rejected bids Aug. 31, sewer lines, treatment plant. L. B. **$50,181**. CD 9/8, under LB.

CONTRACTS AWARDED

N. Y., Albany—Bd. Contr. & Supply, City Hall, Open Cut Portion of Beaver Creek Trunk Relief Sewer, approx. 1,680 ft. reinf.-con. sewer from vicinity S. Pearl St. to Hudson River along Rennselaer St., to Louis Longhi & Son, Box 580, Glens Falls, **$549,250**. Bids 9/9. CD 9/14, under LB.

O., Euclid—City, 585 E. 222 St., sanitary sewer from E. 207 to E. 220 Sts., to Continental Constr. Co., 19615 Nottingham St., Cleveland, **$82,798**. Est. $85,000. Harry Stalley, c/o owner, engr. Awarded 9/23. CD 11/22/48.

Tex., Dodd City—City, sanitary sewers, own forces. Approx. **$55,000.** Wyatt C. Hedrick, Box 4265, Dallas, engr.

Wis., Greenfield (P. O. Milwaukee)—Town of Greenfield, 7325 W. Forest Home Ave., Zone 14, vitr. clay sanitary sewers in various streets, to L & L Service Co., 906 E. Center St., Milwaukee, Zone 12 **$57,304.** Bids 9/26. H. C. Webster & Son, 739 N. 2 St., Milwaukee, Zone 3, engrs.

PROPOSED PROJECTS

WATER SUPPLY

●**Calif., San Francisco**—Public Utilities Comn., City Hall, 34 mi. 79 in. concrete, steel pipeline from Mission San Jose to Crystal Springs Reservoir, **$10,000,000.** CD 2/5/45.

Ky., Lawrenceburg—City, City Hall, water treatment plant, **$347,000.**

O., Akron—City, Wendell R. La Due, Water Div. Supt., 2 m. g. water tower in Fairlawn District, on Stockbridge Rd. near Sagamore Rd. and piping to tank, **$100,000.**

O., Ashtabula—Ashco Raw Water Co., c/o National Distillers Chemical Corp., Ashtabula, water intake crib and approx. 395 lin. ft. pipeline in concrete cradle in Lake Erie, pumping station near mouth of the Ashtabula River, near here. **$300,000.**

O. Middletown—City, City Hall, soon takes bids Contr. 1A, 30,000 ft. 12- to 24-in. c.i. pipe, supplying and reinforcing mains with valves, fittings, manholes, etc.; Contr. 1B, 24,900 ft. 6- to 16-in. c.i pipe, valves, fittings, manholes, appurtenances. Floyd G. Browne & Assoc., 196 S. Main St., Marion, consult. engrs. CD 7/28.

O., Toledo—Comrs. Lucas Co., Courthouse, 24-in. watermain along Tremainesville Rd. to Trilby and Westwood Addn. areas, replacing 6-in. line, **$290,000**; 500,000 gal. water tank, **$89,000**. Raymond Hall, c/o owner, deputy co. engr.

Pa., Hollidaysburg—General State Auth., 18 and Herr Sts., Harrisburg, water supply and distr. sys. at Hollidaysburg State Hospital. **$153,564.** J. Murray Africa Co., 113 Fourth St., Huntingdon, consult. engr. A. F. Jones, c/o owner, ch. engr. CD 6/21.

Pa., West Mifflin—West Mifflin Boro, P. O. Box 321, Terrace, water supply sys. **$100,000.** Alex Hutchinson, 608 South Ave., Wilkinsburg, engr.

Tex., Baytown—Harris Co. Fresh Water Dist. 8, Baytown, WW imprvs., extens. **$200,000.** Joe

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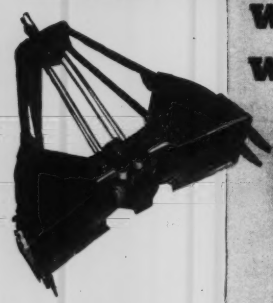

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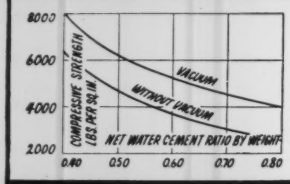

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J. Rady, 811 American Fidelity Bldg., Fort Worth, consult. engr. CD 9/26.

Tex., Garland — Garland - Trinity Imprvt. Assn., M. K. Weitzel, chm., Garland, municipal reservoir on Rowlett Creek, **$500,000.**

●**Tex., Grand Prairie, Irving and Arlington**—Cities of Grand Prairie, Irving and Arlington, Grand Prairie, reservoir on Bear Creek for municipal water supply, **$1,000,000.**

Tex., Lancaster—City, domestic water supply reservoir, on 10-Mile Creek, **$450,000.**

Tex., Lufkin—City, c.i. waterlines. Approx. **$185,000.** Koch & Fowler, 713 Great Natl. Life Bldg., Dallas, consult. engrs. CD 9/15.

Wash., Toppenish—City, City Hall, defeated bonds, wells and water sys. imprvs. **$275,000.** G. D. Hall & Assoc., Larson Bldg., Yakima, consult. engr. CD 8/29.

Alta., Edmonton—Municipality, watermains, **$269,646.** A. W. Haddon, city engr. CD 4/2/47.

Ont., Toronto—Municipality, 36-in. watermain Parkdale Pumping Station to Pearson Ave., **$183,000.** Murray Stewart, city engr. CD 8/16/44.

●**Que., Charlesbourg**—Municipality, R. Bedard, secy., water sys., Approx. **$500,000;** sewers, Approx. **$700,000,** throughout town. Z. Langlais, 105 Cote de La Montague, Quebec City, archt. CD 8/8.

Que., Hull—City, H. L. Leblanck, clk., WW, sys. repairs, Approx. **$200,000.**

Que., Noranda—Municipality, WW sys., **$150,000.** A. M. Hogg, town engr.

Sask., Regina—Municipality, J. W. D. Farrell, supt., 14,766 ft. 6- to 18-in. watermain, 26 hydrants, 400 ft. hydrant drain connections.

SEWERS, WASTE DISPOSAL

Calif., Holtville—City, treatment plant and sewer lines. **$100,000.** Francis H. Bulot, 411 W. 5 St., Los Angeles, consult. engr.

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, sanitary sewers in McCulloch Ave. and other streets, C.I. 1331, **$72,100;** sanitary sewers in Reno Ave., C. I. 1330, **$84,800** in Temple City, C. E. Arnold, co. engr.

Calif., Merced—City, City Hall, **$250,000** bond election Nov. 8, sewage treatment plant. CD 3/18.

Calif., Roseville — City, City Hall, voted $250,000 bonds, sewage disposal plant imprvs. **$261,800.** Clyde C. Kennedy, 604 Mission St., San Francisco, consult. engrs.

Calif., Susanville — Susanville Consolidated Sanitary Dist., Susanville, voted **$100,000** bonds sewage disposal plant. W. R. Jennings, City Hall, city engr. CD 8/25.

Ia., Carter Lake (RFD from Omaha, Neb.)—Carter Lake, sewer pressure line from Avenue H to Missouri River, **$130,000.** Henningson Eng. Co., Standard Oil Bldg., Omaha, Neb., engr. CD 4/16/47.

Mass., Northampton—City, Bd. Sewer Comrs., City Hall, sewerage treatment plant, **$100,000-$500,000.** Albert Goldberg, 739 Boylston St., Boston, engr. Frank Norgenroth, 739 Boylston St., Boston, assoc. engr. CD 8/12.

Mo., St. Charles—City, City Council, City Hall, **$175,000** bond election about Dec. 1, trunkline sewers, repairing storm water facilities. C. H. Owens, city engr.

N. Y., Long Beach—West Long Beach Sewer Dist., Long Beach, treatment plant and pumping station as addn. to existing plant, **$350,000.** CD 10/29/45.

O., Lorain—City, City Hall, **$690,000** bond election Nov. 8, storm sewers in various streets. Lewis Goodell, city engr.

Pa., Gettysburg—Gettysburg Boro, Gettysburg; primary sewage treatment plant addn. **$200,000.** Richard P. Harmon, State Chamber of Commerce Bldg., Harrisburg, consult. engr.

R. I., Lincoln—Sayles Finishing Plants, H. G. Killam, plant mgr., Walker St., sewage plant, treatment facilities, incl. trickling filter beds, chlorination plant, etc., Walker St., **$200,000.** Weston & Sampson, 14 Beacon St., Boston, Mass., consult. engrs.

Tex., Baytown—Harris Co. Fresh Water Dist. 8, Baytown, sanitary sewer extens. **$225,000.** Joe J. Rady, 811 American Fidelity Bldg., Fort Worth, Zone 2, consult. engr. CD 9/26.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, plans by Carleton W. Adams, A & M System archt., 228 Admin Bldg., sanitary sewers for bldgs. in campus area and farm layouts. $253,852.

Tex., Dickinson — City, sewage treatment plant, **$155,000.** Joe J. Rady, 811 American Fidelity Bldg., Ft. Worth, consult. engr.

Tex., Eagle Lake—City, voided $310,000 bond election held Sept. 10, enlarging sanitary sewerage sys. New **$150,000** bond election Oct. 1. **(Correction-status).** CD 9/16.

Tex., Fort Worth—W. O. Jones, city mgr., Ft. Worth, sanitary sewers in Glen Garden Addn., **$140,000;** Carter & Burgess, 401 Continuay Bldg., consult. engrs.; sanitary sewer extens. in Alta Mire and Ridglea Addns., **$125,000;** Joe J. Rady, 811 American Fidelity Bldg., Ft. Worth, consult. engrs. CD 2/4.

Tex., Harlingen—City, City Hall, sanitary sewer lines, **$265,000,** sewage treatment plant, **$175,000;** storm sewers and drainage, **$94,500.** J. R. Brule, city engr.

(Continued on page 85)

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Maximum Tie Spacing, Inches
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Maximum Tie Spacing, Inches
PLYFORM USE
1. Use wide wooden wedges rather than pinch bars in stripping.
2. Lower carefully from high places, don't drop on edges or permit careless handling.
3. Clean panels thoroughly after each use.
4. Stack flat on dry level platforms, using stickers to permit normal drying.
5. Recoil before each pouring. A standard wood form oil of 100 viscosity is generally preferred. DO NOT USE crank case drainings.
6. Apply oil with swab so that surface feels greasy to touch. Don't use too much oil.
7. All newly cut edges should be sealed or doped with white lead and oil.
8. Long time storage should be indoors. (Tarpaulins may prevent proper air circulation and cause moisture to collect.)
PLYWOOD THICKNESS
Double 2 x 4 Wales
Double 2 x 6 Wales
Double 3 x 6 Wales
Required Capacity of Tie for Maximum Tie Spacing
2980#
4640#
7500#
NOTES
This Calculator designed for internal vibrators only.
Tie Loads designed for wales acting as three span continuous beams. For wales acting as simple beam (two end ties only) reduce the required tie capacity by 16%. For wales acting as two span continuous beams (one tie between end ties) increase required tie capacity by 10%.
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INSTRUCTIONS
EXAMPLES
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SIZE OF STUDS
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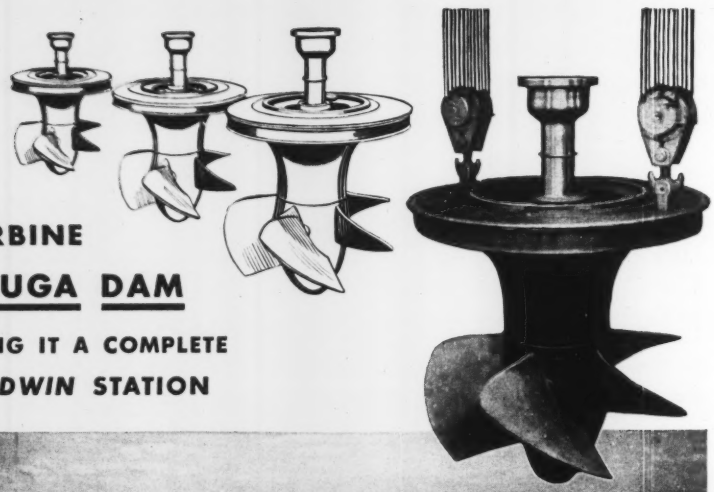

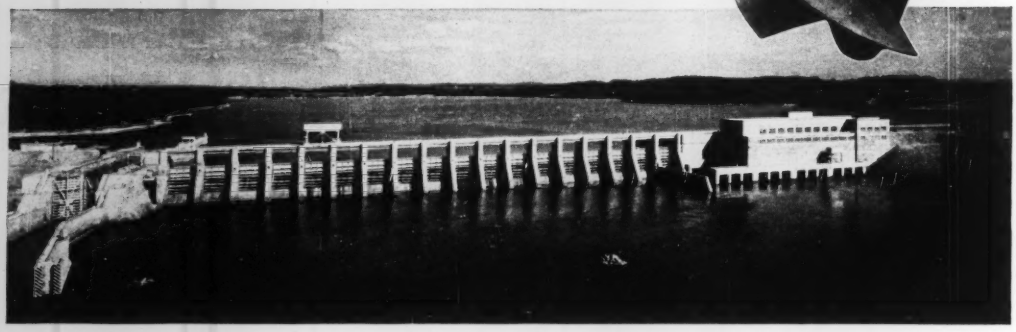

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(Continued from page 82)

Tex., Highland Park—City, E. T. Earnest, mayor, Highland Park (Dallas), storm sewers, $350,000. T. C. Forrest, Jr., Praetorian Bldg., Dallas, consult. engr., and R. B. Allen, City Hall, city engr.

Tex., Lufkin—City, sewage disposal plant, Approx. $175,000; drainage, storm sewers. Approx. $150,000. Koch & Fowler, 713 Great Natl. Life Bldg., Dallas, consult. engrs. CD 9/15.

Wash., Toppenish — City, City Hall, defeated bonds, treatment plant, laterals, and drainage sys. $425,000. G. D. Hall & Assoc., Larson Bldg., Yakima, consult. engrs. CD 8/29.

N. S., Sydney—Cape Breton Co., W. Carmichael, warden, Courthouse, sewerage sys. in districts of Donkin, Florence, Westmount, South Bar and Grand Lake Rd., Approx. $750,000.

Que., Noranda — City, J. David, mayor, sewers, watermains, Macamic Rd. development, Approx. $250,000.

Que., Noranda — Municipality, sewerage sys. $100,000. A. M. Hogg, town engr.

Que., Quebec City—City, J. X. Chouniard, city clk., enlarging incinerator plant, Approx. $500,000. Ed. Hamel, c/o owner, engr.

STREETS AND ROADS

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, curbs, gutters, sidewalks in 107 St. and other Prarie to Yokon Sts., $90,000; curbs, gutters, walks in 112 St., Prairie Ave. to Crenshaw Blvd., $82,700 both Inglewood. C. E. Arnold, co. engr.

Ga., Americus—City, bond election Oct. 25, street imprvs. $150,000.

N. C., Wilmington — City, paving streets. Approx. $300,000.

O., Lorain—City, City Hall, bond election Nov. 8, resurf., paving various streets. $650,000. Lewis Goodell, city engr.

● **Pennsylvania**—State Hy. Dpt., Harrisburg, **Lehigh and Northampton Counties**—construct Allentown-Bethlehem-Easton by-pass from Route 22, from east of Foglesville near Allentown to the Delaware River Bridge at Easton. $12,700,000. E. L. Schmidt, c/o owner, ch. engr.

Tex., College Station—Agricultural & Mechanical College of Texas, College Station, plans by Carleton W. Adams, A & M System arch., 228 Admin. Bldg., farm road constr. $125,000.

Tex., Eagle Lake—City, voided bond election held Sept. 27, paving, imprvs. $250,000. (Correction-status). CD 9/16.

Tex., Harlingen—City, asph. paving, repairs. $300,000. J. R. Brule, city engr.

Tex., Houston—E. A. Parks, Co., 2626 Westheimer St., street contsr. and paving, Southwest area, 2 large subdivisions, $100,000.

Tex., Lufkin—City, street paving. Approx. $200,000. Koch & Fowler, 713 Great Natl. Life Bldg., Dallas, consult. engrs. CD 9/15.

EARTHWORK, WATERWAYS

Tex., Port Arthur—City, 4¼ mi. seawall extens. $441,000. Robert J. Cummins, Bankers Mortgage Bldg., Houston, consult. engr. M. D. Gates, city engr. CD 6/6/47.

Ont., Sturgeon Falls—Abitibi Power & Paper Co. Ltd., Fort William, dam repair, $100,000.

AIRPORTS AND AIRBASES

Md., Frederick—AIRPORT IMPRVS.—City, W. R. Watter, city engr., City Hall, airport imprvs., Monroe St., 1 mi. east of here, $170,000. R. Brooke Maxwell Assoc., Pikesville, engrs. CD 1/2/45.

Tex., Houston—AIRPORT DRAINAGE, etc.—City, M. H. Westerman, secy., Contr. 2, airport drainage, concrete outfall channel 11,400 ft. long, 8 x 9.5 ft. and 8 x 12 ft., 36- to 72-in. mono. circular storm sewers, north side of Airport, $900,000. L. Fugate, City Hall, city engr. CD 7/31/46.

Wash., Seattle—HANGAR ADDNS, etc.—Northwest Airlines, Wold-Chamberlain Airport, Minneapolis, Minn., hangar addn. $350,000; 72,000 sq. ft. concrete paving apron adjacent to hangar, $100,000; R. O. Ritchie, constr. engr.

LATIN AMERICA

Mexico, Azcapotzalco—National Railways of Mexico, Bolivar, 19, Mexico, D. F., plans railroad freight station, $500,000.

Mexico, San Pedro de los Pinos—Filtracion y Purificacion, S. A., Av. 2, No. 23, San Pedro de los Pinos, D. F., plans water purifiers factory. $250,000.

Panama, Panama City—Cia Manufacturera, Panama City, de Clavos, plans nail mfg. factory.

Panama, Panama City—Republic of Panama, Panama City, plans construction and modernization water and sewage systems in suburbs of Panama City, $40,000,000. CD 10/24/46.

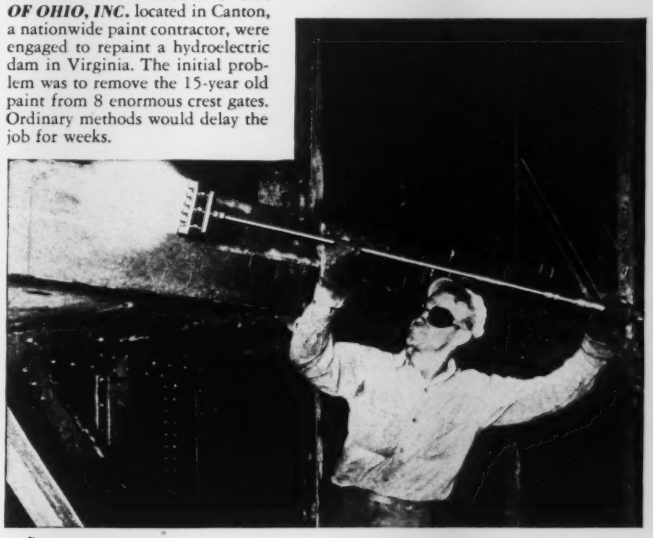
Panama, Panama City—Republic of Panama, Panama City, plans race track, $1,000,000.

PUBLIC BUILDINGS

Ark., Camden—HOSPITAL—Ouachita Co., Camden, hospital, $900,000.

Flame cleaning speeds 'face lifting' on giant dam

MILLER CONTRACTING CO. OF OHIO, INC. located in Canton, a nationwide paint contractor, were engaged to repaint a hydroelectric dam in Virginia. The initial problem was to remove the 15-year old paint from 8 enormous crest gates. Ordinary methods would delay the job for weeks.



G. E. Hartwick, Airco Technical Sales Representative, suggested oxyacetylene flame cleaning with Series 9200 Torches and Airco Style 120 tips. Quickly and easily applied, the intense heat of the flame cockled the old paint, loosened scale and drove off surface moisture in a single operation.

The Miller Contracting Co. found that a flame cleaned surface made for a better finished paint job. An executive said, "We're convinced that flame cleaning is the most efficient and economical method of preparing steel surfaces prior to painting. We now use it almost exclusively for removing rust and scale."

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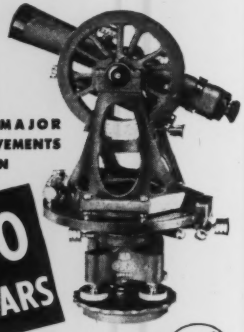

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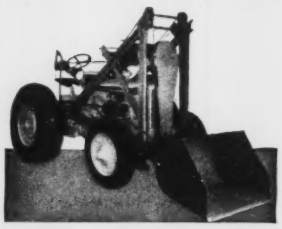

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Calif., Escondido—SCHOOL FACILITIES—Escondido Elementary School Dist., Escondido, voted **$300,000** bonds school facilities.

Calif., Monrovia—SCHOOL—Monrovia City School Dist., Monrovia, bond election Oct. 18, school, **$350,000.** Wm. Ainley, 999 Wildrose Ave., archt.

●**Calif., San Diego**—LIBRARY—City, Civic Center Bldg., **$2,000,000** bond election Nov. 8, main library, and branches at Linda Vista, Pacific Beach, El Cerrito, North Park and Mission Hills. CD 9/5/46.

Calif., Torrance — SCHOOL — Torrance City School Dist., plans by Daniel, Mann, Johnson, 672 S. LaFayette Park Pl., Los Angeles, South Torrance School. **$277,000.**

Calif., Truckee — SCHOOL — Truckee-Tahoe Joint Union School Dist., Truckee, plans by Gordon Stafford, Forum Bldg., Sacramento, high school, **$750,000.** CD 9/12.

Colo., Colorado Springs—HOSPITAL—City, City Hall, plans by Edward L. Bunts, engr. and archt., 470 First Natl. Bank Bldg., Denver, 2 story, 34 bed rein.-con. hospital addn. **$100,000.** CD 9/8/48.

Colo., Denver — SCHOOL — School Dist. 1, City and Denver Co., 414 14 St., plans by T. H. Buell & Co., 730 14 St., Stephen J. Knight Elementary School, E. Exposition Ave. and S. Steele St., Approx. **$250,000;** Junior High School, E. Florida Ave., and S. Monroe St., Approx. **$250,000.**

Colo., Denver — SCHOOL — School Dist. 1, City and Denver Co., 414 14 St., plans by Charles D. Strong, engr. and archt., 2138 Chapa St., 2 story Irving Grade School addn., S. Irving and W. Kentucky Sts. Approx. **$250,000.**

●**Conn., Hartford**—SCHOOL—City Bd. Educ., 249 High St., brick, steel, concrete school, Lyme St. **$1,040,000.**

Conn., Storrs—COLLEGE—State, Raymond Thatcher, comptroller, State Capitol, Hartford, plans by Dwight Smith, 956 Chapel St., New Haven, brick, steel College of Pharmacy, **$500,000;** brick, steel classroom college addn., University of Connecticut, **$250,000.** CD 1/19.

Del., Rehoboth Beach—SCHOOL—Rehoboth Special School Dist., Rehoboth, school, **$300,000.**

Del., Smyrna — SCHOOL — Smyrna Special School Dist., Smyrna, school, **$320,000.**

Del., Wilmington — SCHOOL — Alfred I. du Pont Special School Dist., Talleyville, Wilmington, school, Concord Pike, **$337,000.**

Del., Wilmington — SCHOOL — Rose-Hill Minquada School Dist. 47, 2019 Franklin St., school at New Castle Hundred, **$390,000.**

Fla., Apopka — SCHOOL — Orange Co. Bd. Pub. Instruction, Orlando, plans by Richard Boone Rogers, Orlando, Senior High School, **$450,000.**

Fla., West Palm Beach — HIGH SCHOOL — Palm Beach Co., West Palm Beach, plans by Edgar S. Wortman, 1122 N. Dixie Hy., Lake Worth, negro high school, Approx. **$250,000.** CD 1/7.

Fla., Winter Park — SCHOOL — Orange County Bd. Pub. Instruction, Orlando, plans by James B. King, Orlando, Killarney School, **$303,000.**

Idaho, Lewiston—DORMITORY—Northern Idaho College of Educ., Lewiston, plans by H. Richardson, Lewiston, mens dormitory, **$270,000.**

Idaho, Rupert—SCHOOL—School Bd., Rupert, plans by Hummel, Hummel & Jones, Sonna Bldg., Boise, concrete high school, **$750,000.** CD 3/31.

Ia., Des Moines—PARKING BUILDING—City, City Hall, plans by Wetherell & Harris, Shops Bldg., municipal parking bldg. Approx. **$300,000.** CD 8/9.

Kan., Kansas City—NURSES HOME—State of Kansas, Topeka, plans by C. L. Marshall, state archt., Topeka, and John Maultsby & Co., consult archts., Brotherhood Bldg., Kansas City, nurses home adn., State Medical Center, **$432,630.** CD 4/20.

Kan., Onaga—SCHOOLS—Bd. Educ., Onaga, plans by Glover & Newcomb, 3101 Huntoon St., Topeka, high and grade school, **$275,000.**

●**Kan., Topeka**—HOSPITAL—City, City Hall, **$2,000,000** bond election Nov. 15. Stormont Hospital, Griest & Ekdahl, New England Bldg., archts. CD 6/9, under Commercial Bldgs.

Kan., Winfield — DORMITORY — State of Kansas, Topeka, plans by C. L. Marshall, state archt., Topeka, employees dormitory, State Training School, **$260,000.**

Me., Portland—SCHOOL—City of Portland, School Dpt., plans by Miller & Beal, Inc., 465 Congress St., 2 story school, Stevens Ave. **$600,000.**

●**Md., Baltimore**—HOUSING—Housing Auth. of Baltimore, P. Darling, dir., 709 E. Eager St., 450 unit 2 story, bsmnt., masonry housing, 38 acre plot, McTavish, Pine Heights, Benson and John Aves., **$3,825,000;** 300 unit 2 story, bsmnt. masonry housing, 15 acre plot Belair Rd., opposite Clifton Park, **$2,550,000;** 750 unit 2 story, bsmnt. housing, 90 acre plot **$6,375,000.** CD 5/21/45.

Md., Henryton — NURSES QUARTERS — State of Maryland, Dpt. P. Imprvts., 200 W. Franklin St., plans by Proctor & Engelhardt, 8616 Georgia Ave., Silver Spring, nurses quarters, Henryton T.B. Sanatorium, **$350,000.**

(Continued on page 89)

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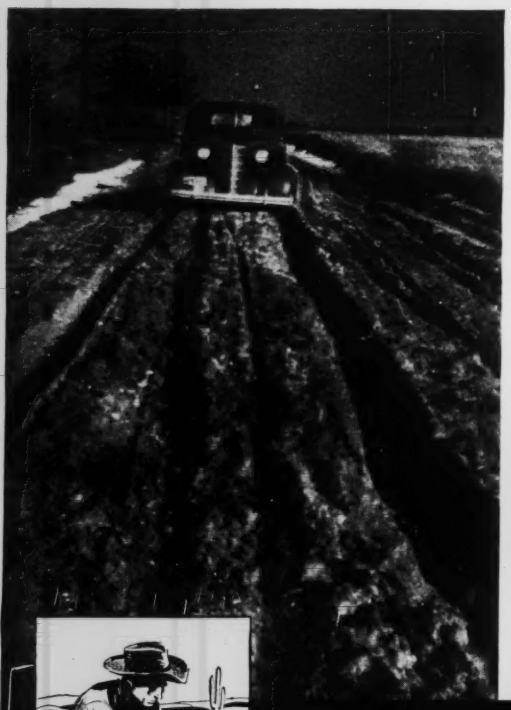

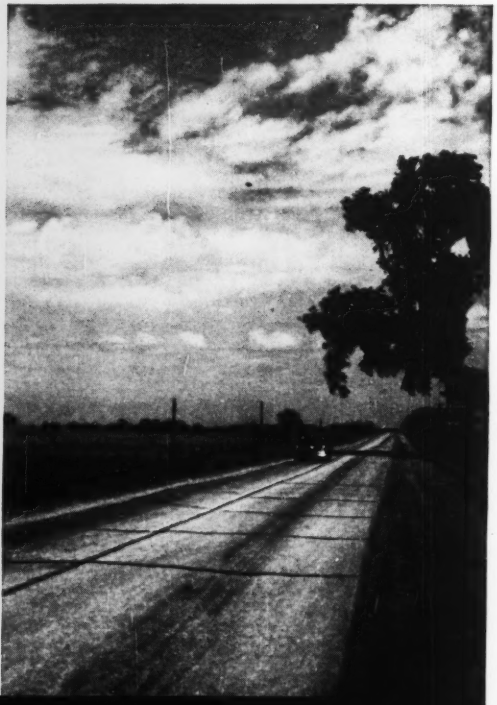

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(Continued from page 86)

Mass., Adams — SCHOOL — Town, School Dpt., J. F. Farrell, supt., Commercial St., Senior High School, **$955,000.**

Mass., Fairhaven—SCHOOL—Town of Fairhaven, Supt. Schools, Fairhaven, plans by Lloyd M. Hendrick, Main St., Buzzards Bay, school addns., in East Fairhaven, Approx. **$250,000.**

Mass., Pittsfield—FIRE STATION—City of Pittsfield, Fire Dept., 239 Tyler St., plans by Bradley & Gass, 71 North St., 2 fire stations, 1 at W. Housatonic St. and other Peck's Rd. **$280,000.**

● **Mass., Taunton** — HOSPITAL GROUP — Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Boston, plans by Leland & Larsen, 814 Statler Bldg., Boston, hospital group, State School at Camp Myles Standish, incl. tunnels, power house, dormitories and cafeteria, service bldgs. utilities and nurses home, **$8,700,000.** R. D. Kimball Co., 6 Beacon St., Boston, engr. CD 9/27/48.

Minn., Elbow Lake—POWER PLANT—Village, A. W. Roettiger, clk., Village Hall, municipal diesel electric plant, **$275,000.** General Eng. Corp., 2950 Chicago Ave., Minneapolis, engrs. CD 9/16.

Minn., Hector—SCHOOL—Bd. Educ., plans by Architects Associated, 500 Sexton Bldg., Minneapolis, school. Approx. **$250,000.** CD 1/25/45.

Minn., Minneapolis—DETENTION HOME—City, Bd. P. Welfare, 26 City Hall and Court House, plans by Long & Thorshov, 400 Metropolitan Life Bldg., 2 story womens detention home, Parkers Lake near here, **$250,000.**

Minn., Redwood Falls—HOSPITAL—City, F. B. Forbes, clk. plans by C. H. Buetow, 570 N. Snelling Ave., St. Paul, hospital, **$450,000.**

Minn., South St. Paul — HOSPITAL — City, J. F. O'Donnell, recdr., defeated **$300,000** bonds, Sept. 13, municipal hospital. CD 6/22.

● **Neb., Lincoln** — HOUSING — City Housing Auth., R. E. Campbell, ch., 114 N. 12 St., 700 housing units. **$2,000,000.** D. L. Erickson, city engr.

● **Neb., Lincoln** — LABORATORY, etc. — University of Nebraska, 12 and R Sts., meats laboratory for animal industry dpt. **$250,000;** agronomy bldg. **$850,000.**

N. J., Westville — SCHOOL — Bd. Educ., Westville, defeated bonds school, **$300,000.** Hettell & Albert, 501 Cooper St., Camden, archts. Horace B. Nicholson, Old Broad St. Station Bldg., Phila., Pa., consult. engr. CD 8/12.

N. C., Raleigh—BUILDING—State Bd. Pub. Bldgs. & Grounds, Raleigh, plans by Wm. H. Deitrick, Morgan St., building for State Bd. of Health, Caswell Square. **$600,000.** CD 5/20.

● **N. C., Raleigh**—ADMINISTRATION—State Hospital Raleigh, plans by Northrup & O'Brien, Reynolds Office Bldg., Winston-Salem, administration bldg. **$1,300,000.**

N. C., Raleigh—HIGHWAY SHOPS—State Hy. & Pub. Wks. Comn., Dr. Henry Jordan, chn., Raleigh, highway shops, 41.3 acres across highway from present shops near State Fair Grounds. Approx. **$250,000.** Wm. H. Rogers, Jr., c/o owner, state hy. engr.

O., Attica — SCHOOL — Bd. Educ., Attica, bond election Nov. 8, 50x70 ft. centralized school addn. **$345,000.**

Okla., Perry—POWER PLANT—City, voted bonds Sept. 20, municipal power plant exten. **$190,000.**

Pa., Allentown—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, hospital at Allentown State Hospital. **$600,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Allentown — DIETARY, etc. — General State Auth., 18 and Herr Sts., Harrisburg, plans by Lange & Everett, 12 N. 6 St., addn. to and revamping dietary facilities and stores at Allentown State Hospital. **$560,000.** A. F. Jones, c/o owner, ch. engr. CD 6/14.

Pa., Clarks Summit—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, plans by von Storch & Pearce, 506 Spruce St., Scranton, Zone 3, 125 patient tubercular

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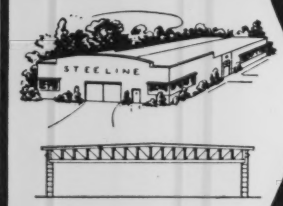

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bldg. at Clarks Summit State Hospital. **$800,000.** A. F. Jones, c/o owner, ch. engr. CD 6/14.

Pa., Cresson — HOSPITAL — General State Auth., 18 and Herr Sts., Harrisburg, medical service unit and tubercular hospital for the State Dpt. Health. **$370,000.** A. F. Jones, c/o owner, ch. engr. CD 5/25/45.

Pa., Danville — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, disturbed female's bldg. at Danville State Hospital. **$658,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Dixmont—ADMISSION—General State Auth., 18 and Herr Sts., Harrisburg, admission bldg. at Dixmont State Hospital. **$800,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Dixmont—BOILER PLANT—General State Auth., 18 and Herr Sts., Harrisburg, boiler plant, **$600,000;** tunnel and steam distr. sys. **$300,000,** at Dixmont State Hospital. J. E. Burke & Assoc., Magee Bldg., Pittsburgh, consult. engrs. A. F. Jones, c/o owner, ch. engr. CD 6/14.

Pa., Elizabethtown — HOSPITAL — General State Auth., 18 and Herr Sts., Harrisburg, 2 wings to main hospital at State Hospital for Crippled Children. **$625,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Hanover Twp. (near Burgettstown)—SCHOOL—Bd. Educ., R. D., Burgettstown, plans by Beall & Parkins, Washington Trust Bldg., Washington, 2 story, brick consolidated grade school, **$250,000.** CD 8/25/44.

●**Pa., Hollidaysburg** — BUILDINGS — General State Auth., 18 and Herr Sts., Harrisburg, plans by Hunter, Caldwell & Campbell, 3601 5 St., Altoona, dietary bldg. at Hollidaysburg State Hospital. **$1,099,508;** plans by C. J. Lappley, River View Manor Apartment, Harrisburg, hospital bldg. at Hollidaysburg State Hospital, **$2,199,016.** A. F. Jones, c/o owner, ch. engr. CD 6/21.

●**Pa., Hollidaysburg** — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, disturbed patients bldg. at Hollidaysburg State Hospital. **$1,325,000.** A. F. Jones, c/o owner, ch. engr.

Pa., Hollidaysburg — BARRACKS — General State Auth., 18 and Herr Sts., Harrisburg, barracks and examining field for the Pennsylvania State Police. **$316,425.** Buchart Eng. Co., 611 W. Market St., York, consult. engr. A. F. Jones, c/o owner, ch. engr. CD 6/16.

Pa., Mayview — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, building for 150 tubercular patients at Mayview State Hospital. **$790,000.** A. F. Jones, c/o owner, ch. engr.

●**Pa., Mayview** — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, senile patients bldg. at Mayview State Hospital. **$2,500,000.** A. F. Jones, c/o owner, ch. engr. CD 6/14.

Pa., Muncy — COTTAGES — General State Auth., 18 and Herr Sts., Harrisburg, receiving cottages at Muncy Industrial Home. **$280,000.** A. F. Jones, c/o owner, ch. engr.

●**Pa., Norristown**—MEDICAL OFFICE, etc.—General State Auth., 18 and Herr Sts., Harrisburg, plans by George M. Ewing, Western Savings Fund Bldg., Phila., medical office bldg. addn. at Norristown State Hospital, **$282,500;** plans by Paul Henon, Fox Bldg., Phila., reconstruct Bldg. 12 for female working patients at Norristown State Hospital, **$1,702,500.** A. F. Jones, c/o owner, ch. engr. CD 6/14.

●**Pa., Phila.** — SECURITY — General State Auth., 18 and Herr Sts., Harrisburg, plans by Eugene A. Stopper, 2112 Spruce St., Zone 30, maximum security bldg. for female patients at Phila. (Byberry) State Hospital. **$2,500,000.** A. F. Jones, c/o owner, ch. engr. CD 2/10/47.

Pa., Pittsburgh—JUNIOR HIGH SCHOOL—School Dist. Upper St. Clair Twp., Upper St. Clair Twp., Pittsburgh, plans by Button & McLean, 119 E. Montgomery Ave., N. S. 1 and 2 story bsmnt., Junior High School, Upper St. Clair Twp., near here. **$800,000.**

●**Pa., Selinsgrove** — BUILDINGS — General State Auth., 18 and Herr Sts., Harrisburg, building for epileptics at Selinsgrove State Hospital, **$700,000;** plans by Paul V. Rice, Sunbury, tubercular patients bldg., **$450,000.** A. F. Jones, c/o owner, ch. engr. CD 6/16.

●**Pa., Somerset** — HOSPITAL — General State Auth., 18 and Herr Sts., Harrisburg, Somerset State Hospital addn. **$1,750,000.** A. F. Jones, c/o owner, ch. engr.

●**Pa., Somerset** — HOSPITAL BLDGS. — General State Auth., 18 and Herr Sts., Harrisburg, plans by Prack & Prack, archts., and Walter Mong, assoc., 119 Federal St., Pittsburgh, building for disturbed patients at Somerset State Hospital, **$1,615,492;** plans by Eric Fisher Wood, Journey's End, R. D. 1, Box 95, Bedford, dietary bldg., **$1,099,508;** plans boiler plant, **$710,246,** Peter F. Loftus Corp., Oliver Bldg., Pittsburgh, Zone 22, consult. engr.; water supply and distr. sys., **$442,000.** Capitol Engr. Corp., Dillsburg, consult. engrs.; plans by Sorber & Hoone, First Natl. Bank Bldg., Greensburg, laundry, **$273,000.** A. F. Jones, c*o owner, ch. engr. CD 6/14.

●**Pa., Spring City**—HOSPITAL BLDGS.—General State Auth., 18 and Herr Sts., Harrisburg, tubercular patients bldg. at Pennhurst State School, **$700,000;** plans by Baader, Young & Schultze, 1500 Walnut St., Phila., laundry addn. at Pennhurst State School, **$302,170.** A. F. Jones, c/o owner, ch. engr. CD 6/16.

Pa., Torrance — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, plans by

(Continued on page 92)

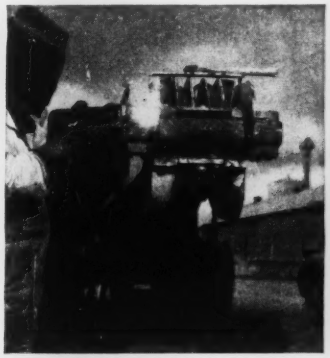
Suggestions for Cutting Costs of Maintenance with Arc Welding

INCREASES LIFE OF DIPPER TEETH. *Worn teeth are built up with Lincoln "Abrasoweld" electrode, followed by two weave beads across face of point on both sides with Lincoln "Tungweld," a new tungsten carbide type of electrode for exceptional resistance to abrasion. Rebuilt tooth gives three to four times longer service.*

REPLACES DIPPER TEETH SHANKS *on new high tensile steel lip of $\frac{3}{4}$ yard dragline bucket with Lincoln "Shield-Arc 85."*

CONSTRUCTION equipment of every description is kept in top operating order at less cost with fast, easy arc welding. Unexpected breakdowns are quickly repaired on the job with portable gasoline or diesel engine driven Lincoln "Shield-Arc" welders. For use in maintenance shops, Lincoln electric motor driven welders simplify the repairing of all different kinds of broken machinery parts as well as the reclaiming of worn parts with tough, wear-resistant hardsurfacing. Many types of construction equipment, not normally available, can be built at surprisingly low cost to suit every specialized need. On all work, solid, dependable welds are assured with "Fleetweld" and other low cost Lincoln electrodes, welding plain carbon steels, alloy, stainless and high manganese steels as well as cast iron, aluminum, copper and brass.

RECLAIMS EXTRACTOR ARM *on 50-ton floating derrick. Break in 2" alloy plate is beveled and welded with Lincoln "Shield-Arc LH-70" electrode.*



REINFORCES JIB BOOM *on 15-ton combination truck crane and pile driver. Old worn tubular unit is replaced with new tubing braced at each end with steel plate using Lincoln "Fleetweld 5" electrode.*

BUILDS MATERIAL CONVEYOR *with steel salvaged from old refinery cracking tower. Welded with "Fleetweld 7," hopper and conveyor system transports materials at lower cost from stock pile to mixer.*

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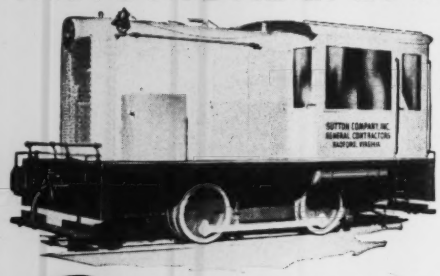

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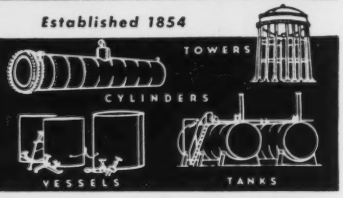

(Continued from page 90)

Kuhn & Newcomer, 508 Third St., Pittsburgh, Zone 19, building for tubercular patients at Torrance State Hospital, **$900,000.** A. F. Jones, c/o owner, ch. engr. CD 6/21.

●**Pa., Woodville** — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, disturbed male patients bldg. at Woodville State Hospital. **$1,000,000.** A. F. Jones, c/o owner, ch .engr.

●**Pa., Woodville** — BUILDING — General State Auth., 18 and Herr Sts., Harrisburg, plans by Thomas B. Garman, 701 Washington Rd., Pittsburgh, Zone 16, building for female senile patients at Woodville State Hospital, **$1,000,000.** A. F. Jones, c/o owner, ch. engr. CD 6/16.

R. I., Newport — GARAGE — City, Harry Hamilton, comr. P. Wks., City Hall, cinder or concrete block municipal garage, incl. repair and maintenance dept. facilities for motor trucks. **$100,000.**

R. I., Providence—GARAGE—City, D. J. Roberts, mayor, City Hall, garage at incinerator plant, Fox Point, repair service and storage for garbage and rubbish trucks. **$100,000.** Robert B. Strong, Fox Point, engr.

S. C., Columbia—SCHOOL—State Industrial School Bd., c/o The McPherson Co., archt., 408 S. Main St., Greenville, Girl's Industrial School. **$300,000.**

Tex., Arlington — BUILDINGS — Arlington State College, Arlington, plans by Carleton W. Adams, A & M System archt., 228 Administration Bldg., College Station, masonry engineering, **$300,000;** heating sys., incl. steam lines, **$95,000;** masonry science bldg., **$400,000.**

Tex., Bryan — FIRE STATION — City, fire station, **$150,000.** Freese & Nichols & Turner, 407 Danciger Bldg., Ft. Worth, consult. engrs. CD 9/12.

Tex., Bryan — TURBINE, etc. — City, 5,000 kw. steam turbine and generator unit in electric power plant project area, **$700,000.** Freese, Nichols & Turner, Natl. Standard Bldg., Houston, consult. engrs. Arthur L. Nelson, Blanco, consultant. CD 9/23.

●**Tex., College Station**—BUILDINGS—Agricultural & Mechanical College of Texas, College Station, plans by Carleton W. Adams, A & M System archt., 228 Admin. Bldg., masonry memorial center, **$625,000;** masonry science, **$600,000;** 5 farm layouts, incl. bldgs., fencing, drainage, earthen tanks, grading, etc., **$500,000;** masonry administration, **$650,000;** masonry engineering, **$1,000,000;** masonry physical educ., **$550,000;** masonry veterinary hospital, **$450,000;** masonry library and engineers library, **$300,000;** 2 masonry wings to electrical engineering bldg., **$450,000.**

Tex., Columbus — SCHOOL — Columbus Independent School Dist., Columbus, grade public school, **$250,000.**

Tex., Commerce — HOUSING — City, 50 rental housing units, **$437,500.**

Tex., Corsicana—SCHOOL—Navarro Junior College, Corsicana, voted bonds Sept. 23, science and rehabilitation, **$250,000;** masonry main school, **$325,000.** CD 8/25.

Tex., Dallas — HIGH SCHOOL — Dallas Independent School Dist., Akard and Royal Sts., plans by Mark Lemmon, 1210½ Main St., converting wartime Hughes Strut Plant into Junior-Senior High School, **$400,000.** CD 11/5/45.

Tex., Harlingen—BUILDINGS—City, public bldg., **$250,000;** storage garage and repair shop, **$75,000.** J. R. Brule, city engr.

Tex., Houston — SCHOOLS — Houston Independent School Dist., 1600 Washington St., plans by Wilson, Morris & Crain, 3330 Graustark St., masonry school, Curry Rd. area, **$250,000;** masonry South Acres School, **$350,000.** Stayton Nunn, 2425 Ralph St., co-ord. archt. CD 6/23/47.

●**Tex., Houston** — HOSPITAL — Bd. Regents, University of Texas, Austin, plans by MacKie & Kamrath, 2713 Ferndale St., cancer research hospital, **$1,000,000,** dentistry, **$1,000,000,** both at Texas Medical Center. Walter P. Moore, 4605 Montrose Blvd., consult. engr. Lockwood & Andrews, Union National Bank Bldg., mech. engr. CD 4/11.

●**Tex., McAllen**—HOUSING—McAllen Housing Auth., McAllen, plans by Zeb Rike, Nelson Bldg., 400 low cost housing units, **$3,000,000.** Reese & Harkrider, 3323 Bristol Rd., Fort Worth, consult. engrs. CD 9/1.

Tex., Pleasant Grove (Dallas P. O.)—SCHOOL—Pleasant Grove Independent School Dist., Pleasant Grove, school, **$300,000.**

Tex., Prairie View College—BUILDINGS—Prairie View State College, Prairie View College, plans by Carleton W. Adams, A & M System archt., 228 Admin. Bldg., College Station, masonry plant and animal industry, **$275,000;** home economics wing, training school, **$275,000.**

Tex., Prairie View College—WAREHOUSE, etc.—Prairie View State College, Prairie View College, plans by Carleton W. Adams, A & M System archt., 228 Admin. Bldg., College Station, masonry warehouse, **$75,000;** masonry engineering, **$300,000.** CD 5/24/46.

Tex., San Antonio — COURTHOUSE etc. — Bexar Co., Charles Anderson, judge, Courthouse, plans by Malcolm Simons, Aztec Bldg., and

(Continued on page 97)

All Muscle ...no fat

3½-yard ESCO Cast-Welded Dipper on Lima 1201 with 32'6" boom, and 22' dipper stick, excavating sand and gravel in California quarry.

Strength to lick tough jobs, but without useless weight to slow down your digging—that is the story of the *ESCO* Cast-Welded dipper bucket shown here. It means that full fighting strength remains after excess weight has been engineered out. Or, in terms of your digging jobs, it means

Greater Capacity per Pound
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More Payload per Pass

A close inspection of these buckets points out the basic reasons for the performance of *ESCO* Cast-Welded dippers. It shows

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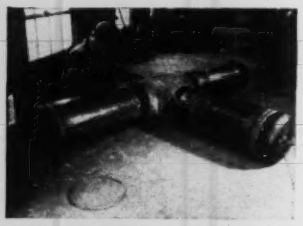
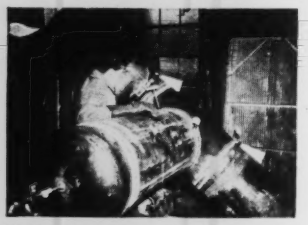
TUBE-TURN

WELDING FITTINGS AND FLANGES



18-inch standard weight Tube-Turn welding tee and pipe laid out preparatory to assembly for hydrostatic pressure test.



Welder completing last bead in assembly. Fitting and pipe now form homogeneous, leakproof unit.

Assembly is hung in pit, massively lined with concrete. During test top grating is closed and held down by a barricade of sandbags.

Final result after hydrostatic pressure test. The straight pipe burst first, and the tee is undamaged.

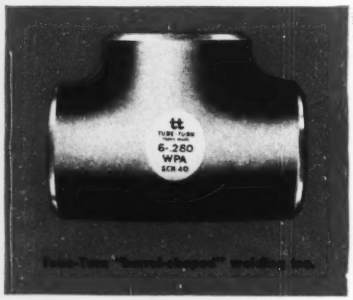
Strength through Design in Tube-Turn welding fittings

The pipe burst first!

Take an 18-inch standard weight welding tee. Take three corresponding lengths of pipe. Weld tee and pipe together. Cap the ends. Lower the assembly into a pit. Then apply hydrostatic pressure—much more than the assembly is supposed to take!

Something has to give! According to the accepted beliefs it should be the tee. But not in the case of the test pictured here. The Tube-Turn "barrel-shaped" tee was used—and the pipe burst, well before the tee was affected! Throughout numerous tests, this new type of tee has withstood at least 25 per cent more pressure than required by the formula given in ASA B16.9.

The superior strength of the tee was achieved without running up extra weight and cost, by carefully planned improvements in shape (based on the sphere, nature's strongest form for internal pressure), and by a carefully engineered distribution of metal.



This is a typical example of *strength through design* in Tube-Turn welding fittings, and another good reason why leading piping engineers specify Tube-Turn equipped, welded piping.

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(Continued from page 92)

Carlton Adams, Jr., Transit Tower, remodeling, reconditioning courthouse, school for boys and girls, home for aged **$300,000**; remodeling, reconditioning county jail, **$288,325.**

Tex., San Antonio—SCHOOL, etc.—Northeast Rural High School Dist. 6, V. O. Beck, chn., Rte. 10, plans by Harvey P. Smith, National Bank Commerce Bldg., high school and some remodeling, **$325,000.** CD 9/2.

Tex., Snyder—SCHOOLS—Snyder Independent School Dist., Snyder, addnl. masonry grade school, **$250,000**; addnl. masonry elementary school, **$250,000.** CD 12/27/48.

Tex., Victoria — SCHOOL — Victoria Independent School Dist., Victoria, plans by Kai J. Lefland, Victoria, masonry school. **$300,000.**

Va., Fairfax — SCHOOLS — Fairfax County School Bd., Fairfax, plans by Dixon & Norman, 1103 E. Main St., Richmond, Baileys Crossroads School, Tyler Park School, Herndon High School; addns. to Mt. Vernon High School and Fairfax Negro School.

Wash., Cusick — SCHOOL — Consolidated School Dist., Cusick, plans by Geo. M. Rasque & Son, Washington Trust Bldg., Spokane, 1 story, 52x164 ft. frame school. **$250,000.**

Wash., Kettle Falls—SCHOOL—School Dist. 196, Kettle Falls, plans by Geo. M. Rasque & Son, Washington Trust Bldg., Spokane, 1 story, 60x214 ft. frame school, **$260,000.**

Wash., Quincy — SCHOOL — School Bd., Quincy, school, **$260,000.**

Wash., Wiley City — SCHOOL — Ahtanum Valley Consolidated School Dist. 127, Wiley City, plans by Fassett & Gochnour, 1 story masonry school. **$300,000.** CD 1/5.

●**Wash., Yakima**—HOUSING—Yakima Housing Auth., Yakima, housing, **$1,500,000.**

Wis., Madison—INSTITUTE—University of Wisconsin, Madison, plans by Roger C. Kirchoff, state archt., Madison, 5 and 6 story McArdle Memorial Institute for Heart Research adn. **$291,000.**

●**Alaska, Juneau**—HOUSING—Alaska Housing Auth., Juneau, 150 housing units, **$1,500,000.**

Alaska, Kodiak — HIGH SCHOOL — School Bd., Kodiak, plans by W. A. Johnson & Assoc., 1st. Natl. Bank Bldg., Everett, Wash., 1 story masonry high school, **$350,000.**

Alta., Edmonton — MARKET — Municipality plans by Maxwell C. Dewar, city archt., Edmonton market, 103 Ave., **$300,000.**

B. C., Burnaby—SCHOOL—Burnaby School Bd., 2800 McKay Ave., New Westminster, plans by K. J. Sandbrook, 70 8 St., New Westminster, high school, **$320,000.**

N. S., Halifax—HOUSING—City of Halifax Housing Auth., Halifax, low rental housing units, **$350,000.**

Ont., Dresden—HIGH SCHOOL—Town, E. J. Kyle, clk., (Kent-Lambton School Bd., W. Lindsay, secy.), high school. Approx. **$420,000.**

Ont., Milton—HOME FOR AGED—Halton Co., W. Deans, clk., Court House, plans by Rounthwaite, Cameron, Murray & Fairfield, 22 Harbord St., Toronto, home for aged. Approx. **$500,000.** CD 8/2.

Ont., Ottawa — SCHOOL — Ottawa P. School Bd., G. Haram, secy., 330 Gilmour St., plans by C. Burgess, 53 Queen St., school, Main Ave., Approx. **$250,000.**

Ont., Simcoe—SCHOOL—Simcoe High School Bd., C. Misener, secy., plans by D. N. McIntosh, 512 Pigott Bldg., Kingston, 3 story, rein.-con. steel, brick high school addn. Approx. **$300,000.** CD 4/4/46.

Ont., Toronto—GARAGE—Municipality, garage, W. King St. for Street Cleaning Department, **$600,000.** Murray Stewart, city engr. CD 5/11/48.

Ont., Toronto — GARAGES — Municipality, enlargement Central Police Garage, Strachan Ave., and garage for No. 8 Station, **$210,000,** Murray Stewart, city engr.

Ont., Toronto — FIRE HALL—Municipality, fire hall, Adelaide St. **$250,000.** M. Stewart, city engr.

Que., Montreal — POST OFFICE — Dpt. P. Wks., J. M. Somerville, secy., Hunter Bldg., Ottawa, Ont., post office, Blvd. Cremazie and Drolet St. Approx. **$400,000.** G. Brault, c/o owner, archt.

Que., Shawville — SCHOOL — Pontiac Co. Protestant School Bd., Shawville, plans by C. Burgess, 53 Queen St., Ottawa, Ont., high school, Approx. **$350,000.**

COMMERCIAL BUILDINGS

Ala., Birmingham—APARTMENT DEVELOPMENT—Owner, c/o Earl O. Murray, archt., Clark Bldg., apartment development in Fairview Section. Approx. **$250,000.**

Ark., Hot Springs—HOME FOR AGED—David Franklin Parker Foundation, Hot Springs, home for aged at McClendon Springs, near here. **$500,000.**

Calif., East Los Angeles—CHURCH—Roman Catholic Archbishop of Los Angeles, plans by Albert C. Martin & Assoc., 333 S. Beaudry St., Los Angeles, rein.-con. St. Alphonsus Church, Atlantic Blvd. and Hastings St., **$300,000.**

Ga., Atlanta—APARTMENT UNITS—Ardmore Circle Apartments, Inc., c/o Gregson & Ellis, archts., Mortgage Guarantee Bldg., 56 apartment units, **$300,000.**

(Continued on page 101)

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MAXIMUM EFFICIENCY
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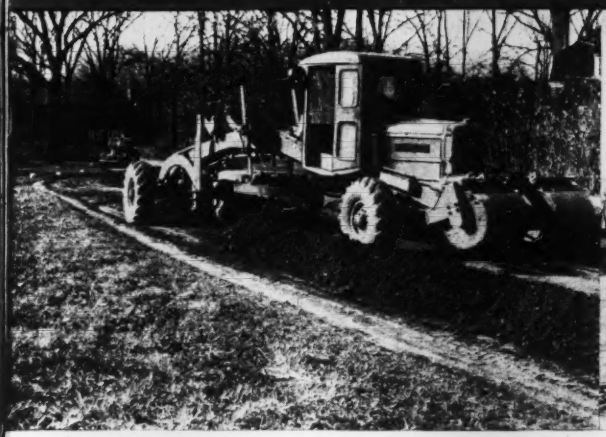
The two circles illustrate the difference in turning radius resulting from All-Wheel Steer. This greatly increased maneuverability is a tremendous help, day in and day out, on all types of work.

Short radius curves and sharp corners are no problem. Making a ditch cut around the corner shown in the picture above is easy for the A-W operator—impossible with any other grader.

Working on a slope is a quick, easy and accurate job. Whether it's riding the bank (as in the photo above), working up from the bottom, or down from the top, All-Wheel Steer holds the grader steadily to the desired position.

Using All-Wheel Steer to offset the front and rear trucks enables the A-W machine to do superb finishing on any slope. In the picture above, the grader is finishing an in-slope, working up from the ditch, leaving no tire marks to mar the surface.

Your horsepower!



Offsetting the grader through All-Wheel Steer neutralizes side thrust. In the photo above, the rear drivers push behind the "toe" of the blade, the front drivers pull ahead of the "heel." All wheels stay clear of the heavy windrow.

Ditches too wet, or too muddy, to furnish traction for ordinary graders are handled easily by the A-W machine as in the photo above. Rear Steer puts the back wheels up where the "going is good"— *but only Rear Steer can do it.*

A Motor Grader with ALL-WHEEL STEER

is Twice as maneuverable as one with Front Steer only

Austin-Western "88-H," "99-H" and Master "99" Power Graders travel quickly and easily to places inaccessible to ordinary graders, maneuver around obstructions such as culverts, bridges or poles, grade sharp reverse curves, and move the heaviest windrows farther and faster with no interference from front axle, frame or scarifier. All-Wheel Steer saves time on every job, makes it possible to do more jobs—faster, easier and cheaper, under all ground and road conditions every month in the year.

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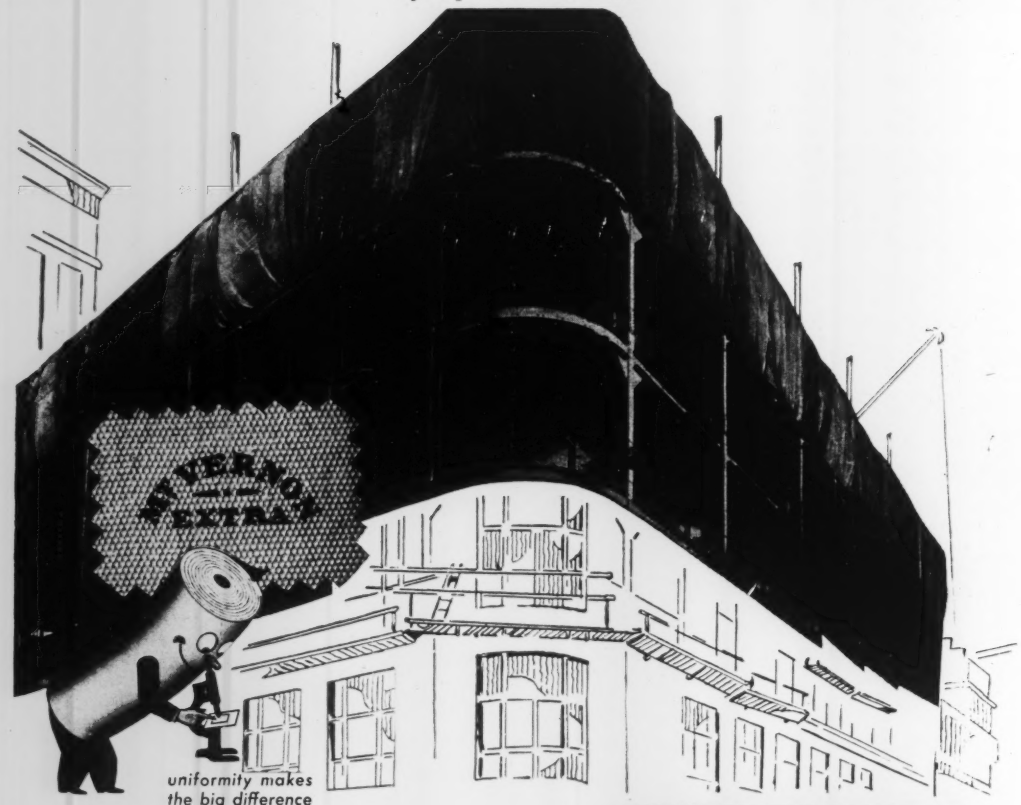

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(Continued from page 97)

Ill., Berwyn — SCHOOL — St. Mary Celle, Father Robert Masthey, 15 and Wesley Sts., plans by Meyter & Cook, 1915 Lincoln Ave., Chicago, Zone 14, 2 story, bsmnt., 75x115 ft. rein.-con. brick, stone school. **$280,000.**

Ill., Chicago—GYMNASIUM, etc.—St. Andrews Parish, Rev. B. J. Sheil, 3546 N. Paulina St., plans by Leonard Anthony Giliatto, 5901 N. Clark St., Zone 40, 100x150 ft. gymnasium, 70x80 ft. school addn., 24x33 ft. convent, 26x33 ft. rectory. **$300,000.**

Ill., Chicago — CONVENT — St. Thomas Apostle Parish, 5470 S. Kimbark St., Zone 15, plans by Harry Byrne, 1607 W. Howard St., Zone 26, 3 story, bsmnt., steel, brick, stone, concrete convent addn. **$250,000.**

Ill., East St. Louis—HIGH SCHOOL—Catholic Diocese of Belleville, Most Rev. Albert R. Zuroweste, Bishop, 222 S. 3 St., Belleville, plans by Saunders & Johnson, Chemical Bldg., 721 Olive St., St. Louis 1, Mo., Central Catholic High School, Kingshighway and St. Clair Ave. CD 10/29/45.

Ill., Hinsdale — RETREAT HOUSE — St. Francis Retreat, Mayslake, plans by Barry & Kay, 53 W. Jackson St., Chicago, 3 story, 30x100 ft., steel, brick, stone, rein.-con. retreat house. **$250,000.**

Ill., Park Ridge — APARTMENT — Greenwood Court Corp., Touhy and Greenwood Sts., plans by Alexander L. Levy, 179 W. Washington St., Chicago, Zone 2, 3 story, 75x204 ft., concrete, brick, stone apartment bldg., incl. 60 units. **$310,000.**

Ind., Ferdinand—SCHOOL—Ferdinand Roman Catholic Parish, Father David Duesing, Ferdinand, plans completed by Warweg & Hagel, 306 Grien Bldg., Evansville, 1 story, 61x191 ft. and 63x127 ft. brick, stone, rein.-con. steel school and auditorium. **$250,000.**

●**Ind., Hammond** — UNIVERSITY — Purdue University, Lafayette, plans by Walter Schoeler & Assoc., Lafayette, 2 story, 123x254 ft., rein.-con., steel, brick, stone Calumet Center University, 169 and Woodman Aves. **$3,000,000.**

Md., Baltimore — APARTMENTS—Erdman Corp., 2122 Maryland Ave., plans by Alexander S. Cochran, 411 N. Charles St., brick veneer apartments, 15 groups, 308 units, 1600, 1687, 4501, 4699, Freedom Way, separate contracts. **$350,000.**

Md., Fort George Meade—HOUSING—Meade Heights Apartments, Ralph De Chiaro, pres., 4625 Edmundson Ave., Baltimore, plans by Hal. A. Miller & Assoc., 2118 Maryland Ave., Baltimore, twenty-four 2 story, bsmnt. brick-garden type apartments, semi-detached, incl. 325 units, near here.

Mass., Lowell—CHURCH—Calvary Baptist Church, 21 Grace St., plans by A. Dirlam, 673 Boylston St., Boston, rebuilding 2 story religious education units, 2 and 1 story fellowship hall, chapel. **$400,000.**

Mass., Newton—COLLEGE—Boston College, 140 Commonwealth Ave., Newton, plans by Maginnis & Walsh, 126 Newburg St., Boston, 4 story, bsmnt., classroom bldg. Approx. **$250,000.**

Minn., Rochester—HOUSING—Owner, c/o James A. Neatherlin, archt., Nacol Bldg., Wichita Falls, Tex., 50 brick, concrete ranch style motel units, **$450,000.**

Miss., Washington—DORMITORY—Chamberlain-Hunt Military Academy, Washington, dormitory, **$400,000.**

Mo., Pattonsburg — HOSPITAL — Ankara Grotto (Masonic Order), Pattonsburg, hospital, **$275,000.**

Neb., Neligh—HOSPITAL—Antelope Memorial Hospital, Neligh, revised plans by E. B. Watson, Norfolk, hospital. **$260,000.**

N. J., Vineland—STORE—Sears Roebuck & Co., 4640 Roosevelt Blvd., Phila., Pa., plans by the Ballinger & Co., 4640 Roosevelt Blvd., Phila., Pa., department store, **$250,000.**

N. Y., Brooklyn—SCHOOL—Roman Catholic Church of Saint Mary Queen of Heaven, 1319 E. 57 St., Brooklyn, Zone 3, plans by Gustave E. Steinback, Hunting Ridge Rd., Stamford, Conn., 3 story parochial school, 1302-38 E. 57 St., **$354,559.**

N. Y., New York—OFFICES and STUDIO APARTMENT—Children's Aid Society, 105 E. 22 St., Zone 10, plans by Gibbons & Heidtmann, 80 W. 40 St., Zone 18, offices and studio apartment 150-156 E. 45 St., **$275,000.**

●**N. Y., New York**—HOSPITAL—New York Society for the Relief of the Ruptured & Crippled, 321 E. 42 St., Zone 17, plans by Rogers & Butler, 219 E. 44 St., Zone 17, 170 bed hospital, Franklin D. Roosevelt Dr. between 70 and 71 Sts. **$3,000,000.** CD 5/6.

N. Y., New York—SCHOOL—Teachers College, Columbia University, 525 W. 120 St., Zone 27, plans by Adams & Woodbridge, 204 E. 39 St., Zone 16, school alterations, 3060 Broadway. **$250,000.**

N. Y., Scarsdale—CHURCH—Scarsdale Congregational Church 1 Heathcote Rd., church. **$250,000.**

●**O., Euclid**—HOSPITAL—Euclid Glenville Hospital, J. F. Davis, chn., 701 Park Wood Dr., Cleveland, plans by Conrad, Hayes, Simpson, Ruth, 1110 Hanna Bldg., Cleveland, 6 story bsmnt., brick, steel general hospital, E. 185 and Lakeshore Sts., **$3,000,000.** J. F. Fierbaugh, Schofield Bldg., Cleveland, structural engr.

O., Lakewood—APARTMENTS—Whitecliff Apartments, Inc., c/o M. H. White, archt., 750 Prospect St., Cleveland, four 3 story,

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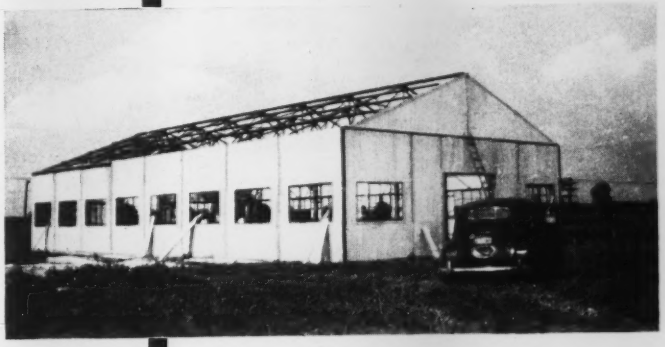

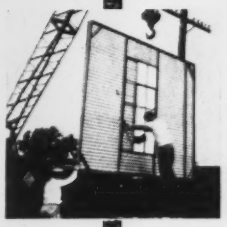

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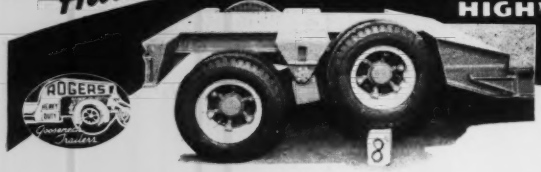
Haul HEAVY PROFITABLE LOADS OVER RESTRICTED HIGHWAYS



Worm's eye view showing the "walking beams", widely spaced bearings and heavy frame construction.

Adequate "rubber" capacity. Wheels that oscillate to distribute the load over all tires regardless of road irregularities.
Both are essential to practical hauling of heavy machinery and equipment
Both are accomplished in this large capacity Rogers Trailer, yet it is only 8 feet wide to conform to the requirements of some states.
Entirely satisfactory performance is accomplished by means of a "walking beam" such as you have seen on steam boats. If you use heavy duty trailers, write for the Rogers Catalog which illustrates and describes a type and size for every purpose.

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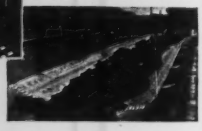
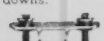


FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. Their use saves expensive replacements and extended shutdowns.



FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.

● Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco belt fasteners. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco. Also illustrates step by step the latest practice in repairing rips and putting in patches.

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FLEXCO H D BELT FASTENERS

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PENNSYLVANIA DRILLING COMPANY
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Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.
THE HAYWARD CO., 48-50 Church St., N. Y.

bsmnt., brick apartments, 11837-43 Edgewater Dr. Approx. **$250,000.** Julius Boenis, 750 Prospect Ave., Cleveland, consult. engr.

O., Lorain—SUPERMARKET—Owner, c/o T. J. Mcadden, archt., 442 Oberlin Ave., 1 and 2 story brick, steel supermarket with paving and curbing, 98 and Broadway. **$250,800.**

Pa., Baden—APARTMENTS—Virginia Terrace Apartments, Inc., Second and Virginia Ave., plans by Phillip Friedman, 121 S. Negley St., Pittsburgh, three 3 story bsmnt., irregular apartments. **$250,000.**

Pa., Gladwynne — CHURCH — Episcopal Church Diocese, 202 S. 19 St., Phila., Penna., plans by Kneelder, Mireck & Zantzinger, 12 S. 12 St., Phila., St. Christopher's Church, **$250,000.** CD 8/4.

Pa., Greensburg—HOSPITAL—Westmoreland Hospital, Greensburg, plans by James H. Ritchie & Assoc., 38 Newberry St., Boston, Mass., and Paul Bartholomew, assoc. archt., 407 1st Natl. Bank Bldg., 3 story brick hospital addn. **$500,000.** CD 12/5/45.

Pa., Meadville—GYMNASIUM, etc.—Allegheny College, Meadville, plans by Lorimer Isich & R. L. Conn Assoc., 215 Montague St., Brooklyn, gymnasium, classrooms and altering present bldg. **$500,000.**

Pa., Phila.—RESTAURANT—International Geneva Assoc., 1528 Chestnut St., rebuilding restaurant, **$250,000.**

Pa., Pittsburgh — STORE — Lerner Stores Corp., 364 4 Ave., New York, N. Y., plans by H. L. Kohl. c/o owner, 4 story, bsmnt., brick, steel ladies apparel store, 440-442 Wood St. **$250,000.**

S. C., Charleston—APARTMENT—Michel J. Shahid, King and Wentworth Sts., plans by Bissett, Carlisle & Wolff, Columbia, 5 story 52 unit brick, steel apartment. **$250,000.**

S. C., Columbia—OFFICE—Palmetto State Life Insurance Co., c/o William Stork, Jr., archt., 819 Harden St., office. Approx. **$500,000.**

Tenn., Chattanooga — DORMITORY, etc. — McCallie School c/o Selmon T. Franklin, archt., 421 Poplar St., joint dormitory and school. **$300,000.**

Tex., Beaumont—SHOPPING CENTER, etc. —M. L. Leffler, Jr., Assoc., Weill Bldg., Beaumont, shopping center, area asph. paving, laundry plant, **$275,000.**

●**Tex., Dallas**—MERCHANDISE MART—National Industries, Inc., Republic Bank Bldg., 10 story merchandise mart, Young and Austin Sts. **$7,500,000.**

●**Tex., Fort Worth**—OFFICE—Continental Life Insurance Co., D. D. Beasley, Rd. Chn., Fort Worth Natl. Bank Bldg., 25 story, 250,000 sq. ft. masonry office, 7 and Main Sts. **$4,000,000.**

Tex., Houston—HOUSING—S. E. Babbitt, W. E. Krumnow & Akard Bell, 6625 St. Augustine St., 40 unit frame housing, concrete slab fdn. **$250,000.**

Tex., Houston — DWELLINGS — Braes Heights Development Co., 3800 Bellfontaine St., 54 dwellings, Merrick and Drummond Sts., **$400,000.** Henry J. Johnson, 5717 Kirby Dr., consult. engr.

Tex., Houston — DWELLINGS — Dryden Corp., 1204 W. Gray St., 50 dwellings, south of Griggs Rd. **$452,000.**

Tex., Houston—DWELLINGS—East End Development Co., 1584 Telephone Rd., 35 dwellings, west of Telephone Rd. **$318,750.**

Tex., Houston—DWELLINGS—A. E. F. Filip, 6701 F St., and L.L. Meineke, 4121 Polk St., 22 dwellings, in Freeway sub-division. **$250,000.**

Tex., Houston—DWELLINGS—L. A. & B. N. Hickman, c/o Claremont Addn., 31 dwellings Oak Knoll St., **$265,000;** 69 dwellings off Hempstead and Ley Rds., **$500,000.**

Tex., Houston—DWELLINGS—Plaza Development Co., Esperson Bldg., 90 frame, stucco dwellings, concrete slab fdn., off new Freeway sub-division. **$814,500.**

Tex., Houston—DWELLINGS—E. F. Stoerner & Co., Inc., 5315 Carrollton St., 20 dwellings, in Freeway sub-division. **$250,000.**

Tex., Houston—STORE—J. Weingarten, Inc., 808 Prairie St., plans by Finger & Rustay, 711 Natl. Standard Bldg., 30,300 sq. ft. store, remodeling, modernizing existing store, asph. paved parking area, Yale and 20 Sts. **$750,000.** CD 2/2.

Tex., Pasadena—SHOPPING CENTER—L. F. Corrigan Interests Mercantile Bank Bldg., plans by Darrell T. Walling, Pasadena, addnl. masonry shopping center, 9220 block Humble Rd., near here. **$350,000.**

Tex., San Angelo—EDUCATIONAL—First Presbyterian Congregation, San Angelo, 2 story, brick, steel, concrete educational bldg. **$250,000.** L. R. Mauldin, Phillips-Talley Bldg., consult. engr.

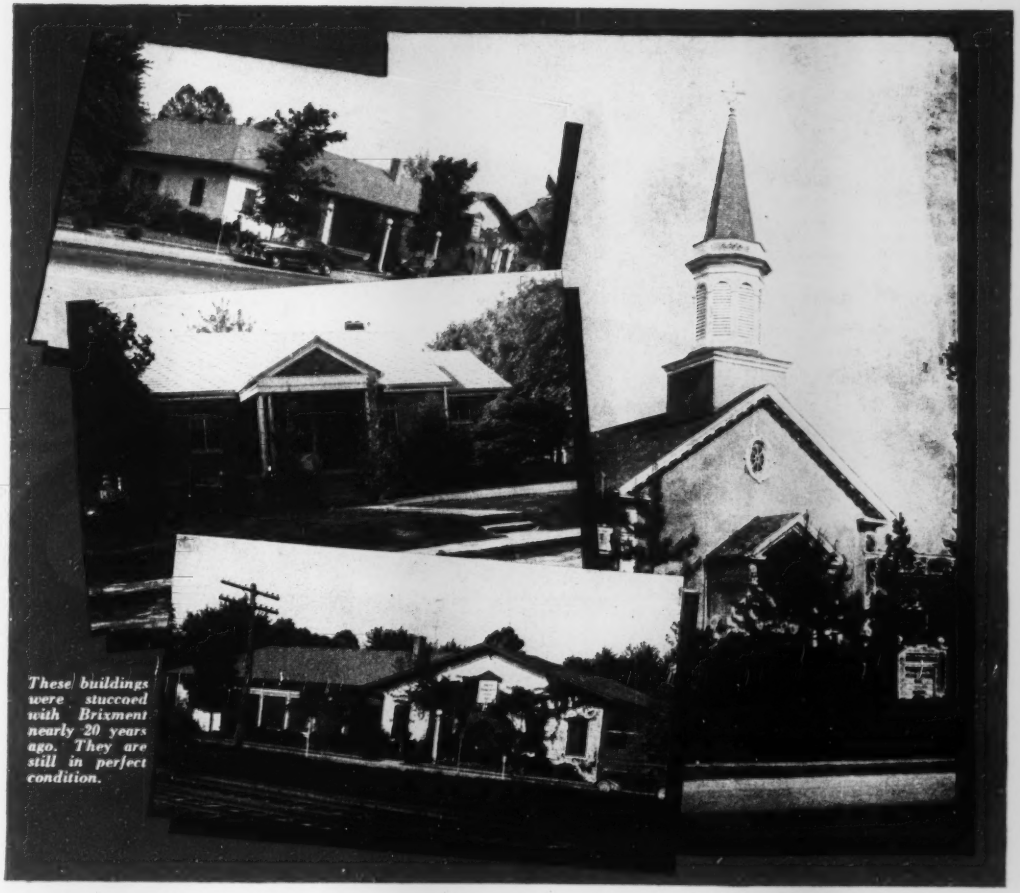
Tex., San Antonio — DWELLINGS — E. J. Burke & Sons, 4221 S. Zarzamora St., 104 addnl. dwellings, area adjacent to Highland Hills. **$650,000.**

Tex., Wichita Falls—RESIDENCES—J. A. Simmons, 2906 Grant Ave., thirty-four 1 story, frame residences, concrete slab fdn. **$265,000.**

Wash., Seattle — BANK — Seattle-First National Bank, 2 and Cherry Sts., Zone 4, plans by J. W. Maloney, Central Bldg., Zone 4, 1 story, 100x100 ft. branch bank, 6 Ave. and Denny Way, **$300,000.**

Wash., Spokane—HOUSES—V. C. Buck, W 2311 Olympic St., 59 houses in Ridgewood Home Proj. **$418,900.**

(Continued on page 106)



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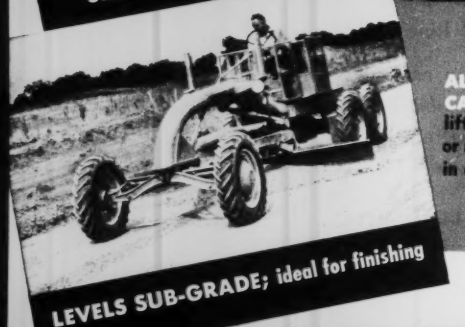
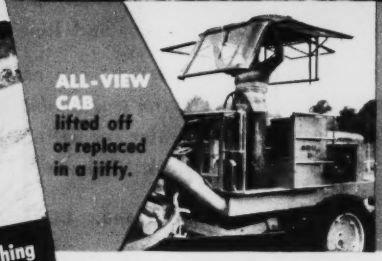


LEVELS SUB-GRADE; ideal for finishing



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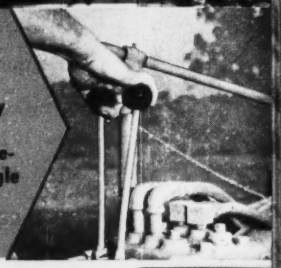
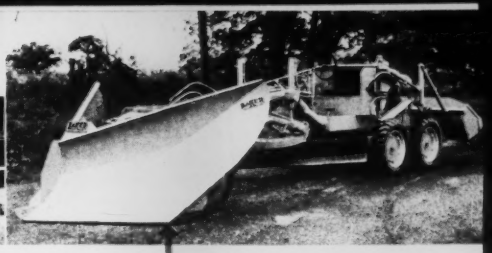


HYDRAULIC SCARIFIER—does a surprising job ...rear-end weight keeps teeth ripping uniformly, at desired depth—smooth, positive steering.

LOADS MATERIAL into trucks with Tractomotive Loader—from windrows and stockpiles...surplus dirt or snow.



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One-third the price of large motor graders

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MAINTAINS DIRT AND GRAVEL ROADS AND STREETS, CUTS SOD FROM SHOULDERS, HANDLES LIGHT CONSTRUCTION

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TAGLINE ADVANTAGES—
YOU NEVER HAD BEFORE

1 You can **CAST** a clamshell
2 You can **TWIST** a clamshell
3 You can **SNUB** a clamshell

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2. **Picking up rocks.** By **Casting** clamshell without swinging, crane operator reached rocks, set clamshell down with minimum damage.
3. **Digging thru blasted cuts.** Twisting bucket with "TAG-MASTER" control, operator positioned clamshell for picking up long rocks without waste of time. (Could apply to any long object.)
4. **Unloading crushed stone from car.** Ability to **cast** and **twist** enabled operator to reach into corners, minimized hand cleanup. (Could apply to any material in cars.)
5. **Pouring concrete wall.** Swing arc tended to carry bucket away from form. With "TAG-MASTER" control, operator pulled bucket so it followed form as he was swinging.

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Seven years of experience prove the TAG-MASTER trouble-free, easy to operate, economical because of
(1) increased operation and
(2) low cost of operation.

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(Continued from page 102)

Wash., Spokane—HOUSES—Guthrie Constr. Co., N. 2928 Nevada St., 60 houses near north city limits, **$375,000.**

●**Que., Quebec City**—MEDICAL CENTER—Local Assn., Dr. J. A. Tardif, pres., 1 Avenue Bein, 10 story, medical center, Boulevard Charest of Lachapelle St. Approx. **$2,500,000.**

INDUSTRIAL BUILDINGS

Ala., Phenix City—PLANT—Sharoom Josephs, c/o L. D. Raines, archt., 2443 Wynnton Rd., Columbus, hosiery plant, **$100,000.**

Fla., Tampa—PLANT—Clorox Co., 850 42 Ave., Oakland, Calif., mfg. plant, **$200,000.**

Ill., Chicago—FACTORY, etc.—Rock Ola Corp., 800 N. Kedzie St., factory, office, **$750,000.**

Ind., Bedford — LABORATORY and FOUNDRY—Allison-Bedford Div., General Motors Corp., C. M. Jessup, mgr., Bedford, plans by Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., 1 story, 120x320 ft., steel experimental laboratory and foundry, **$150,000.** CD 7/25.

Ind., Hammond—FACTORY—E. I. du Pont de Nemours & Co., Nemours Bldg., Wilmington, Del., 1 story, 182x222 ft. concrete, steel factory, **$160,000.** C. H. Topping, Nemours Bldg., Wilmington, Del., ch. engr.

●**La., Shreveport** — PLANT — Universal Oil Products Co., c/o David W. Harris, pres., Slattery Bldg., oil specialty products mfg. plant, on 600 acre tract. Approx. **$1,000,000.**

Mass., West Springfield — WAREHOUSE — Sears Roebuck & Co., West Arlington and S. Homan St., Chicago, Ill., plant by The Ballinger Co., 121 N. Broad St., Phila., Pa., warehouse. **$100,000.**

Minn., Blooming Prairie — STORAGE — Farmers Co-operative, Elevator Co., S. Rask, Blooming Prairie, storage facilities, **$250,000.**

Minn., Cedar—PLANT—Minnesota Co-operative Electric Assn., H. E. Edmunds, pres., diesel electric generating plant, **$200,000.**

Minn., Hopkins—GARAGE, etc.—Suburban Chevrolet Co., Hopkins, plans by G. Becker, 1845 Hennepin Ave., Minneapolis, 2 story, bsmnt. 128x184 ft. service garage and display office addn. **$100,000.**

Mo., St. Louis—PLANT—Bardahl Oil Co., Irwin E. Fuchs, pres., 5680 Natural Bridge Ave., Zone 20, 1 story, brick, concrete, steel plant, with loading docks on two railroad sidings, Natural Bridge Ave., west of Belt Ave.

N. Y., Astoria—STORAGE, etc.—M. Naccache, Herbert Gretsch, archt., 32 Court St., Brooklyn, Zone 2, 2 story storage and factory, Vernon Ave. and 30 Rd. **$200,000.**

O., Cleveland—WAREHOUSE—Fisher Bros. Co., c/o Wm. German, 2323 Lakeside Ave., plans by George S. Rider Co., engr. and archt., 3800 Terminal Tower Bldg., 1 story, brick, cement block, steel warehouses, E. 40 St. **$200,000.**

Okla., Oklahoma City — WAREHOUSE — Safeways Stores Co., 1950 Army St., San Francisco, Calif., plans by Parr & Aderhold, Hales Bldg., wholesale grocery warehouse, N. E. 36 St. and Oklahoma Ave. **$300,000.** CD 10/17/47.

Pa., Britol—PLANT—Rohm & Haas Co., 222 W. Washington Square, Phila., plant expansion, **$250,000.**

Pa., Phila.—WAREHOUSE—Penn Fruit Co., 1919 Chestnut St., plans by The Ballinger Co., 121 N. Broad St., warehouse, Erie Ave. and I St. Approx. **$250,000.**

Pa., Phila. — PLANT — Max A. Williams, c/o Fred B. Loeffler, 155 E. 44 St., New York, N. Y., plant, State Rd. and Rhawn St., Approx. **$100,000.**

Pa., Pittsburgh — FOUNDRY — Union Steel Castings Co., Butler and 62 Sts., plans by Hunting, Larsen & Donnels, Inc., 1150 Century Bldg., 1 story 60x675 ft., concrete, concrete block, steel foundry and machine shop, Butler and 62 Sts. **$250,000.**

S. C., Charleston—PLANT—Woodstock Mfg. Co., Centre St., rebuilding furniture plant. **$250,000.**

Tex., Beaumont — PLANT — Beaumont Enterprise & Journal, Beaumont, plans by Golemon & Rolfe, 203 Rowie Bldg., 1 story, 108x120 ft. reinforced newspaper printing plant, **$150,000.**

Tex., Fort Worth—REFINERY—Magnolia Petroleum Co., 528 N. Main St., reconstruct blast-damaged refinery plant. **$125,000.**

Tex., Houston — SALES, etc. — Rosenstock Motors, Inc., 1120 McKinney St., plans by Richard S. Cofer, 921 Ocean Dr., Corpus Christi, 32,500 sq. ft. auto display, sales and service. **$300,000.** CD 8/12.

●**Tex., Houston**—PIPE MILL—A. O. Smith Corp., M. Esperson Bldg., pipe mill. **$5,000,000.**

Utah, Marysvale—MILL—Green River Exploration Co., Salt Lake City, uranium-ore mill. **$500,000.** (**Correction**-ocean CD 8/8.

Wash., Selah—KILN—Edward Schott Hopyard, Selah, frame bldg. housing 3 hop kilns. **$100,000.**

Wis., Eau Claire — WAREHOUSE — United States Rubber Co., 799 Wisconsin Ave., 4 story, bsmnt., 175x440 ft. warehouse.

Wis., Milwaukee — FACTORY — Milwaukee Shoe Co., 215 W. Maple St., Zone 4, plans by F. F. Drolshagen, 647 W. Virginia St., Zone 4, 5 story, 36x50 ft., steel, brick factory addn., concrete fdn. and floors.

Alaska, Anchorage — PLANT — Permanente Cement Co., 1924 Broadway, Oakland, Calif., cement sacking plant. **$200,000.**

Sask., Regina—CREAMERY, etc—Saskatchewan Co-operative Creamery Assn. Ltd., Regina, creamery and head office bldg. **$250,000.**

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Dixie Electric Co-operative, Union Springs, 190 mi. rural distr. line and sys. imprvs., Bullock Co. **$505,000.**

Idaho, Burley—SWIMMING POOL, etc.—City, City Hall, swimming pool and bathhouse, **$100,000.**

●**Illinois**—RURAL DISTRIBUTION LINES—Wayne-White Counties Electric Co-operative, Fairfield, 252.5 mi. rural distr. lines, 34 mi. 34.5 KV transmission lines, sys. imprvs., Wayne Co. **$1,017,000.**

Ill., Freeport — DRIVE-IN THEATRE — Steve Bennis & Gus Constan, Lincoln, drive-in theatre, near here, Approx. **$100,000.**

Ill., Lincoln — DRIVE-IN THEATRE — Steve Bennis & Gus Constan, Lincoln, drive-in theatre, near here, Approx. **$100,000.**

Louisiana—RURAL DISTRIBUTION LINES—Louisiana Rural Electric Co-operative, Alexandria, 154.5 mi. rural distr. lines, 8.5 mi. 34.5 KV transmission lines, sys. imprvs., Rapides Co. **$253,000.**

La., Gueydon—NATURAL GAS SYSTEM, etc.—Town, **$225,000** bond election Oct. 26, combined natural gas sys. and sewerage sys. CD 10/29/45.

●**Massachusetts, Connecticut and Rhode Island** — TRANSMISSION LINES — Northeastern Gas Transmission Co., Alex **Macomber**, chn., 317 Marlboro St., Boston, Mass., 500 mi. gas transmission lines, Greenwich, Conn., Northampton, Fitchburg, Lawrence, Haverhill, New Bedford, Mass., and Providence, R. I., etc. **$17,000,000.** Tennessee Gas Transmission Co., 1006 Main St., Houston, Tex., consult. engrs.

Minnesota—RURAL DISTRIBUTION LINES—Meeker Co-operative, Light & Power Assn., Litchfield, sys. imprvs., headquarter facilities, Meeker Co. **$370,000.**

Minnesota—RURAL DISTRIBUTION LINES—Stearns Co-operative Electric Assn., Melrose, 343 mi. rural distr. lines, sys. imprvs., Stearns Co. **$820,000,** Engineering Service, Inc., 538 Syndicate Bldg., Minneapolis, consult. engr.

Minn., Minneapolis — PARK — City, Bd. Park Comrs., C. E. Doell, secy. and supt., City Hall. Walte Park imprvs., 34 Ave. and Ulysses St. N.E. **$140,000.** E. Braddock, ch. engr.

+N. Y., New York — MONUMENT IMPRVS. — National Park Service, Interior Bldg., 19 and C Sts. N.W., Wash. 25, D. C., plans by James C. Mackenzie, 5 E. 57 St., Zone 22, imprv. Statue of Liberty National Monument on Bedloes Island, incl. building new landing pier and 6 buildings for residents and staff. **$500,000.**

O., Dover—SWIMMING POOL—City, outdoor swimming pool, at Dels Hill Park. **$100,000.** CD 10/15/43.

Ore., Corvallis — STADIUM — Oregon Bd. Higher Educ., University of Oregon, Eugene, plans by Moffatt, Nichol & Taylor, Concord Bldg., Portland, stadium at Oregon State College. **$622,000.**

Pa., Polk—ELECTRICAL SYSTEM—General State Auth., 18 and Herr St., Harrisburg, reconstruct entire electrical sys. at Polk State School. **$505,630.** Harry B. Joyce, 616 Commerce Bldg., Erie, consult. engr. A. F. Jones, c/o owner, ch. engr.

Pa., Warren—ELECTRICAL SYSTEM—General State Auth., 18 and Herr Sts., Harrisburg, converting electrical sys. from direct current to alternating current a Warren State Hospital. **$400,000.** Harry B. Joyce, 616 Commerce Bldg., Erie, consult. engr. A. F. Jones, c/o owner, ch. engr. CD 6/16.

Tex., Austin — SERVICE — University of Texas, Bd. Regents, Dallas, plans by Giesecke, Kuehne & Brooks, archts., 121 E. 8 St., and Mark Lemmon, consult. archt, 1219½ Main St., Dallas, service for utilities. **$200,000.** Landauer & Guerrero, 4801 Lemmon St., Dallas, mech. engrs.

Tex., Brownwood—STOCK SHOW—Brown Co., c/o Dpt. Brownwood Livestock Assn., Brownwood, defeated bond stock show barn, arena, grading, utilities. **$150,000.** CD 8/18.

Tex., Denton—TELEPHONE SYSTEM—Denton Telephone Corp., c/o Bruce Davis & D. L. Faw, Denton, local telephone sys., incl. bldg., lines, appurtenance. **$400,000.**

Tex., Port Arthur—SWIMMING POOL—Young Mens Christian Assn., Port Arthur, rein-con. outdoor swimming pool. **$100,000.**

Ont., Island Falls — DAM — Abitibi Power & Paper Co. Ltd., Fort William, major repairs at Island Falls dam, **$350,000.**

Ont., Toronto — GOLF COURSES — Municipality, 3 golf courses, **$600,000.** Toronto City Planning Bd., Toronto, engr.

Ont., Toronto — SUBWAY — Municipality, subway on Glen Rd. at Bloor St. crossing **$500,000.** M. Stewart, city engr. CD 1/9/46.

Ont., Toronto — ZOOLOGICAL GARDENS, etc. — Municipality zoological garden, **$300,000;** natatorium, **$300,000.** Toronto City Planning Bd., Toronto, engr. CD 1/26.

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Steel spigot end and rubber gasket (see diagram)
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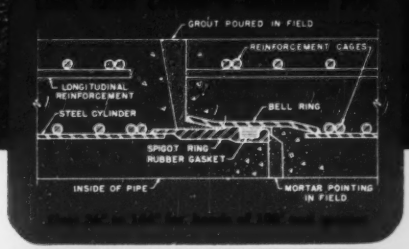
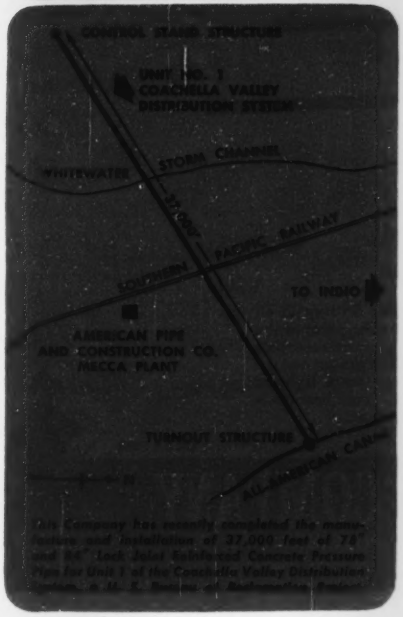
Encased steel reinforcement combines water-tight steel cylinder and cage reinforcement assembly (see diagram)
Steel bell ring (see diagram)





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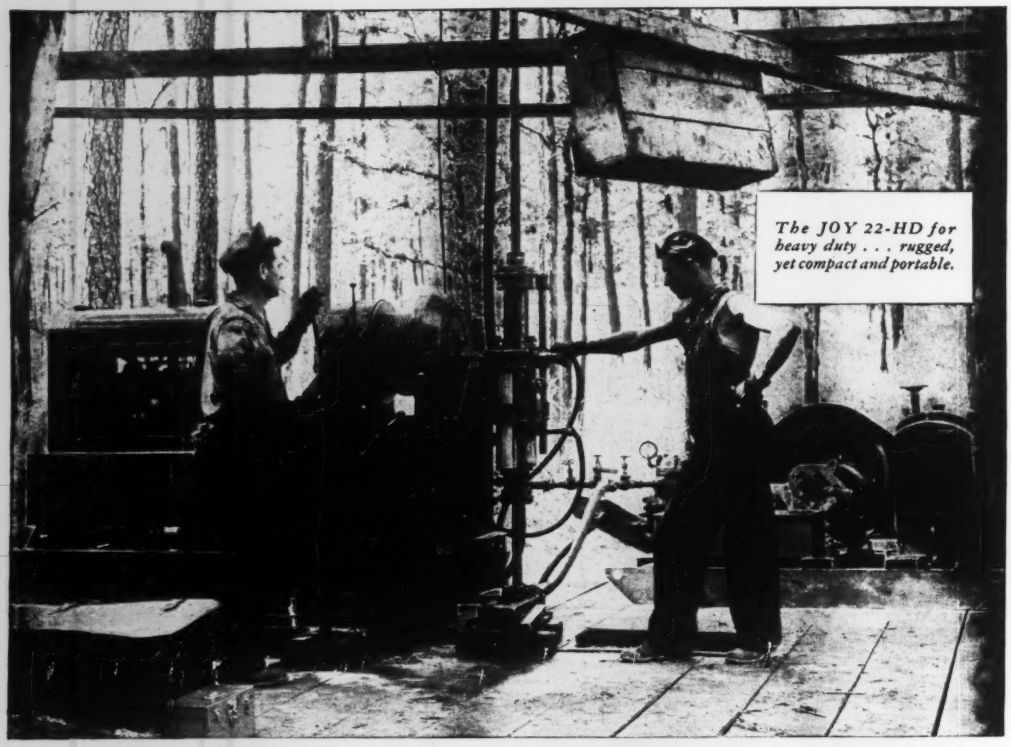

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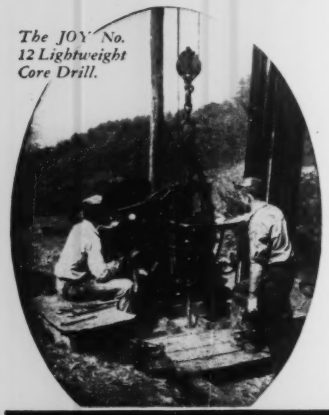

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CONSTRUCTION REPORTS-Second Section

Third Section Construction Reports on page 125

WATER SUPPLY

BIDS ASKED

October 17

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., Zone 7, hauling, laying watermains, appurtenances in Church, Ocean and Pennsylvania Aves.; Avenue J, Burnett, 52 E. 29 and E. 101 Sts.; Gerald and Margaret Cts.; Kings Hy. and Shore Parkway, Brooklyn Boro. Plans deposit $1.

October 20

Mass., Boston—Commonwealth of Masachusetts, Metropolitan Dist. Comn., 20 Somerset St., Contr. 163, furnishing, laying 10,000 ft., 36 in. steel (and) c. i. mains, Melrose and Saugus. Approx. $300,000. Plans deposit $5. CD 5/20/44.

October 26

Calif., Rio Linda—Rio Linda Water Dist., Rio Linda, water distr. sys., Approx. $28,000. Plans deposit $2. Clyde C. Kennedy, 604 Mission St., San Francisco, engr.

LOW BIDDERS

●**Mass., Boston** — Commonwealth of Massachusetts, Metropolitan Dist. Comn., 20 Somerset St., Sept. 29, Contr. 186, pipeline connection, Blue Hills Reservoir, Boston and Quincy, from M. DeMatteo Constr. Co., 200 Hancock St., Quincy, **$1,586,513.** CD 9/20.

CONTRACTS AWARDED

N. Y., Lawrence and Atlantic Beach—Long Island Water Corp., 733 Sunrise Hy., Lynbrook, laying approx. 1,000 lin. ft. 16 in. flexible-jointed c.i. pipe across Reynolds Channel between Beach 2 St., Lawrence, and 7 St., Atlantic Beach, to Bronx Water Works Corp. and Naval Salvage & Contr. Corp., 99 Murray St., New York, Zone 7, Approx. **$70,000.** Bids 8/31. CD 8/19.

S. D., Huron—City, 1 and 2 story, 114x182 ft., brick, steel water softening plant, tot Henkel Constr. Co., Sioux Falls, **$525,506.** Bids 9/26. CD 8/31.

Saskatchewan—Texas Gulf Producing Co., 1347 Nellie Esperson Bldg., Houston, Tex., well drilling, in unorganized district, to Sohio Petroleum Co., 660 Palliser Hotel, Calgary, Alta., Approx. **$100,000.** H. W. Ross, c/o contractor, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

October 25

Ala., Bay Minette—City, sanitary sewer imprvs. Approx. $50,000. J. B. Converse & Co., 106 St. Joseph St., Mobile, engrs.

LOW BIDDERS

Calif., Porterville—State Div. Architecture, P. Wks. Bldg., Sacramento, Sept. 27, sewage disposal plant and water storage reservoir at Institution for Epileptics, from Trewhitt-Shields & Fisher, 926 Parallel Ave., Fresno, **$109,300.** CD 9/6.

●**Fla., Tampa**—Bd. Representatives, City Hall, Sept. 22, intercepting sewers, from Cone Bros. Constr. Co., Causer Ave. and Cumberland St., A1 (Main outlet), **$402,453,** A-2 (Broadway), **$196,245;** trunk sewers, C1 (24th St.), **$182,939;** C2 (35th St.), **$59,805;** C3 (Lemon-Gray), **$158,328*****from Leo T. Butler Co., Silver Springs, Md., intercepting sewers B1 (West River), **$446,231.** CD 8/18.

New York—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Zone 15, Sept. 22, sewers, 58, 56 Sts., Midtown Hy., 54 and 55 Drives, 55 Ave., from Amber Constr. Corp., 94-15 109 Ave., Ozone Park, **$180,247*****246, 249, 252, 251, 178 and 179 Sts., 80 and 146 Rds., Littleneck Parkway, Hillside Ave., and Linden Blvd., from Victor Clemente, 115-28 131 St., South Ozone Pk., **$62,203.** CD 9/14.

CONTRACTS AWARDED

Kan., Newton—City, City Hall, general contract sewage plant, to Rhoades Constr. Co., Newton, **$234,100.** Bids 9/20. CD 8/23.

BRIDGES

BIDS ASKED

October 18

Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg.

Westmoreland Co.—Sect. 31-FG, Contr. 301, substructure 997.67 ft. Brush Creek Viaduct and sect. of roadway adjacent to the West; Sect. 31-F, Contr. 302, grading, draining, paving approx. 3.32 mi.

October 20

†**Kan., Kansas City** — U. S. Eng., 601 Davidson Bldg., Kansas City, S. Mo., installing lifting mechanisms for Union Pacific Railroad Bridge, Serial No. CIVENG 23-028-50-32. CD 9/23.

October 25

Minn., Red Lake Falls—Red Lake Co., A. Prenevost, aud., 284 ft. Bridge No. 6681, 3 beam spans and U-abutments, over Red Lake River, near Red Lake Falls, S. P. 63-502-02 (SAR 1), Proj. S 608 (5). Approx. $100,000. Plans deposit $2.15. Bridge Engineer, State Hy. Dpt., St. Paul, engr. CD 3/14/45.

October 27

Fla., Deland — Bd. Comrs., Bd. Volusia Co, Deland, bridge and causeway with bascule type draw across Halifax River, at Seabreeze; bridge and causeway with bascule type draws, across Halifax River at Port Orange.

November 3

†**Arizona-Nevada**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Kingman, Ariz., railing for bridge deck incl. pendent bases, pendent base plates and 3-inch channels to be embedded in concrete railing posts, for forebay channel bridge, highway over Davis Dam, Davis Dam Proj., Spec. 2809. L. N. Mc Clellan, ch. engr.

November 9

†**Wash., Bridgeport**—U. S. Eng., 4735 E. Marginal Way., Seattle, Zone 4, central three-span continuous steel deck truss, hy. bridge with flanking girder and beam approaches, 1,145 ft. long over Columbia River, incl. substructure, 6 concrete piers and 2 concrete abutments. CIVENG-45-108-50-20.

LOW BIDDERS

Kentucky—State Hy. Dpt., Frankfort, received no bids Sept. 23, traffic bound limestone bridge and approaches at East Fort of Brushy Creek 0.179 mi. East State Line Rds., RS (18-303), Calloway Co. CD 9/9.

CONTRACTS AWARDED

●**Ill., Cairo** — Illinois Central Railroad Co., C. H. Mottier, vice pres. and ch. engr., 135 E. 11 Pl., Chicago, Zone 5, substructure of repairs and reconstruction Ohio River Bridge, to Kansas City Bridge Co., 215 Pershing Rd., Kansas City, Mo., and Massman Constr. Co., 20 W. 9 St., Kansas City, Mo., Total cost **$6,300,000.** CD 5/27.

Oregon—State Hy. Comn., Salem, 3 rein.-con. structures, Tillamook St. to Broadway Bridge, Pacific Hy. West, FAP UI-306 (8), Multnomah Co., to C. J. Montag & Son, N. E. 78 and Halsey Sts., **$865,912.** Bids 8/2, awarded 9/30. CD 8/12, under Streets and Roads, LB.

Alta., Edmonton — Municipality, redecking, lowering 105 Street Bridge, day labor, **$200,000.** A. W. Haddon, city engr.

STREETS AND ROADS

BIDS ASKED

October 20

†**New Mexico** — Bureau Pub. Roads, General Services Admin., 254 New Customhouse, Denver, Colo.,

Otero Co. — 3.86 mi. Forest Proj. 35-42, Alamorgordo-Cloudcroft. Approx. $50,000.

October 27

New York—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Zone 15, grading, constructing retaining walls, drainage facilities and grade separation structures, etc. in Connecting Hy. from Northern Blvd. to approx. 100 ft. north of 32 Ave.

Early 1950

†**Idaho** — Bureau Reclamation, Dpt. Interior, Boise, 18 mi. forest service road, west of Snake River, Caribou National Forest. Palisades Proj., approx. 56 mi. southwest of Idaho Falls.

Bids Asked

Tex., Baytown—B. S. Sturman, 204 Winkler Dr. and R. A. Crabb, Southern Standard Bldg., Houston street paving in area of Wynnewood Addn. $90,000.

Tex., Houston—Monarch Realty Co., 5308 Carrollton St., asph. paving Sect. 2, in Freeway Addn., in Golfcrest area. $50,000.

Tex., Houston—J. Dealy Smallwood, Citizens State Bank Bldg., street constr. and paving, Chocolate Bayou Rd. area. $80,000.

LOW BIDDERS

California—State Div. Hys., Sacramento, plant mix on untreated rock surf. 0.8 mi. Thornton Rd. between Benson Ferry Bridge and 0.8 mi. southeasterly, San Joaquin Co., from M. J. B. Constr. Co., 372 Elks Bldg., Stockton, **$68,502.** CD 9/6.

Calif., Sacramento—Sacramento Co., Courthouse, Sept. 28, imprv. streets in Vienna Woods Dist., from A. Teichert & Son, Inc., Box 1113, **$53,913.**

Kan., Kansas City—City, Clerk Clerk, b. conc., seal coating 23 St. viaduct, Allen Ave. to state line and intercity viaduct, Bluff St. to Mulberry St. and to state line, from Bowen Constr. Co., 3200 Fairmont St., Kansas City, Mo. **$51,023.** CD 6/12/46.

Kentucky—State Hy. Dpt., Frankfort, Sept. 23, traffic bound limestone 3.285 mi. Flemingsburg-Petersville Rd., S 178 (1), SP 35-250, Fleming Co., from Gorman Constr. Co., Flemingsburg, **$150,473*****traffic bound limestone 5.442 mi. Dixon-Vanderburg-Manitou Rd., S 156 (1), SP 54-520, Hopkins Co., from L. G. Arnold, Inc., Eau Claire, Wis., **$90,633*****traffic bound slag 1.91 mi. Inez-Louisa Rd., S 431 (5), Martin Co., and traffic bound slag 5.43 mi. Beauty-Louisa Rd., RS 8-121, Martin Co., from

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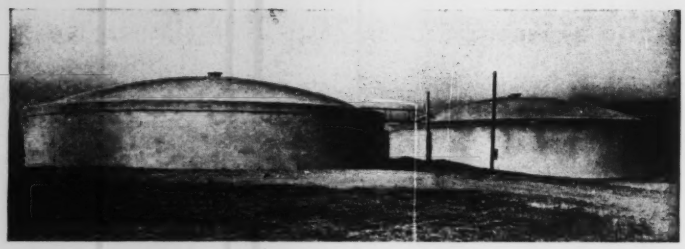

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Kentucky Road Oiling Co., Frankfort, **$72,071** and **$115,510** respectively***traffic bound limestone 1.929 mi. Elams Store-Magoffin Co. Line Rd., S 157 (1), SP 88-58, Morgan Co., and traffic bound limestone 7.026 mi. Nelsonville Rd., RS-90-465, Nelson Co., from Marlowe Constr. Co., Inc., Lexington, **$69,451** and **$84,358** respectively***traffic bound limestone 3.179 mi. Scottsville-Mt. Aerial Rd., RS-2-195, Allen Co., from Stephens-Jeffrey & Co., Tompkinsville, **$77,163*****traffic bound limestone 5.328 mi. Beverly Rd., RS (7-24) (7-56), Bell Co., and traffic bound limestone 19.298 mi. Harold-Ligon Rd., RS 36-216, Floyd Co., from J. C. Codell Co., Inc., Winchester, **$117,239** and **$170,537** respectively***local bank or creek gravel 6.643 mi. Hazel-Ky 121 Rd., RS (18-423), Calloway Co., from Upton & King, Canton, **$55,338*****local bank or creek gravel 4.554 mi. Ky 58-Ky 384 Rd., RS 42-648, Graves Co., from Corbett Davidson & Son and R. I. Cocke, Mayfield, **$109,197*****local bank or creek gravel 8.96 mi. RS (38-367) (38-427), Fulton Co., from Martin Bros. & Fred E. Nance Constr. Co., Campbellsville, **$99,341*****traffic bound limestone 5.148 mi. Webbville-Blaine Rd., RS 64-253, Lawrence Co., from Wells & White Constr. Co., Morehead, **$79,022*****traffic bound limestone 8.326 mi. River Rd., RS 113-527, Union Co., from Old Render Constr. Co., Beaver Dam, **$76,567*****traffic bound limestone, 6.528 mi. Jensonton-Mackville Rd., RS 115-289, Washington Co., from Nally, Ballard & Saltsman, Bardstown, **$73,152.** CD 9/9.

Maine—State Hy. Dpt., Augusta, Sept. 28, bit. grav. surf. 1.27 mi F.A.S.P. S 58 (3), Troy, from Farrin Bros. & Smith, Brighton, **$70,284;** bit. grav. surf. 1.96 mi. F.A.S.P. S 364 (2), Hiram, from Frank Rossi, Gardiner, **$74,324.** CD 9/16.

Md., Baltimore—City, City Hall, Sept. 28, c. conc. paving Contr. 1021, from Trinity Bldg. & Constr. Co., 4420 E. Edgar St., **$167,427;** sheet asph. resurf. Contr. 1022, from Arundel Constr. Co., Inc., 4420 E. Edgar St., **$121,840.** CD 9/20.

Massachusetts — Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, Sept. 27, FI-340 Hy., Lenox, from White Oak Excavating, Inc., 61 E. Main St., Plainville, Conn., **$676,368.** P. H. Kitfield, 100 Nashua St., Boston, chief engr. CD 5/28/45.

North Carolina—State Hy. & Pub. Wks., Comm., Raleigh, rejected bids Sept. 27, c. conc. 1.54 mi. U. S. 19 and 23 from point approx. 1.4 northeast of Enka to point in Asheville, Proj. 9085, Buncombe Co., L. B. **$124,831.** Est. $125,000-$150,000. CD 9/30. Under LB.

●†**Oregon**—Bureau Pub. Roads, General Service Admin., Broadway and Oak Bldg., Portland, Sept. 29, grading, oiling 6.2 mi. Pacific Hy., Douglas Co. from Kuckenberg Constr. Co., 11104 Northeast Holman St., Portland, **$1,182,634.** CD 9/16.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, Sept. 30, construct divided hy. incl. crushed aggregate base with bit. c. conc. pavement, concrete divisor, incl. I-beam hy. overhead bridge; one I-beam bridge for construction of northbound and southbound connection ramps, one I-beam bridge and one rein.-con. arch, 5,690 ft. L. R. 247 (6), T. R. 8, Saw Mill Run Blvd., Allegheny Co. from Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Zone 12, **$2,942,938** ***divided hy. consisting c. conc. westbound variable 36 to 44 ft. wide, eastbound with 4 ft. divisor area, incl. 1 rigid frame c. conc. hy. underpass bridge, grading, drainage 2,993 ft. L. R. 763 (2B), T. R. U. S. 22 and 30, Bates Street Interchange-Penn Lincoln Parkway, Allegheny Co., from R. Perini & Sons, Inc., 72 Montvail Ave., Framingham, Mass., **$2,070,570** ***bit. surf. crushed aggregate base, one rein.-con. structure and drainage 2,117 ft. L. R. 40033, Sect. 6, Luzerne Co., from A. C. Hack & Sons, Lighstreet Rd., Bloomsburg, **$77,566.** CD 9/8.

Tex., Houston—Harris Co. Courthouse, Sept. 26, asph. paving 4 mi. Ralston Rd., from Brown & Root, Inc., Box 3, **$81,407,** est. $50,000 ***asph. paving 6.8 mi. Garrett Rd., from Farnsworth & Chambers, Box 74, **$128,250,** est. $70,000***asph. paving 6 mi. Garth Rd., from Holland Page Constr. Co., Georgetown Hy., Austin **$143,809,** est. $65,000. Cancelled bids to have been opened Sept. 26, hard paving 1.162 mi. Buffalo Speedway extens., **$55,000** CD 9/14.

CONTRACTS AWARDED

Idaho—State of Idaho, Boise, roadbed, surfacing 5.875 mi. North and South Hy., Bonner Co., to Grant Constr. Co., Coeur d'Alene, **$260,749.** Awarded 9/26. CD 1/22/46.

Ind., South Bend—Bd. Comrs. St. Joseph Co., Court House, blacktopping, resurfacing roads, to Rieth-Riley Constr. Co., 1145 Prairie Ave., **$106,853,** est. $110,000. Awarded 9/27. CD 7/13/48.

Missouri—State Hy. Dpt., Jefferson City, graded earth c. conc. 4.136 mi. road from Rt. 14, south to West Plains, Rt. 63, Proj. F 51 (10)-A, to O'Dell & Riney Constr. Co., Hannibal, **$311,179.** Bids 8/26, Awarded 9/22. CD 8/15.

New York—State Dpt. P. Wks., Albany, reconstructing 1.79 mi. Main St. from Buffalo St. south to East Lake Rd., first Urban Arterial Route, city of Canandaigua, Ontario Co., to Lane Constr. Corp., 37 Colony St., Meriden, Conn., **$810,763.** Bids 8/24. CD 8/29, under LB.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, bit. surf. existing pavement 6.09 mi. U. S. 219, incl. 2 rein.-con. slab bridges, one over

Continued on page 113

now it can be told- metallizing stops corrosion

. . . not for one, two, or even ten years—but *from 20 to 50 years* under severe conditions in the field!

We have long known that metallizing stops corrosion. Accelerated tests in the laboratory demonstrated that much. But we wanted a good backlog of actual applications in the field before telling the industrial world, *for sure*, what metallizing would actually do to help solve specific corrosion problems.

Here are two examples of anti-corrosion metallizing. The water storage tank shown is a good case in point. Previous maintenance practice had been to hot-coat the tank interior every 5 or 6 years. This service life was unsatisfactory. So, in 1933 metallizing was used, and pure zinc sprayed on the inside walls. At that time the tank exterior, riser pipe and structure were *painted*, but a small section of the pipe exterior was *metallized* with aluminum as a test panel.

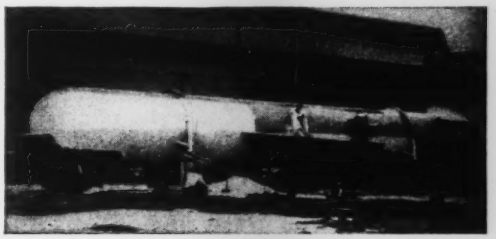
By 1939 paint on the pipe had scaled badly, but the metallized test panel was in excellent condition—in the words of the Riverhead Superintendent, "... as good as the day it was put on." In 1940 the tank interior was inspected. It was found that all pitting and corrosion had been stopped completely by the metallized coating. Consequently, the entire riser pipe exterior was metallized at that time with a coating of zinc, followed by a coating of aluminum; then painted for appearance.

Now, nine years after, the paint has started to peel from weathering. But—even where it has peeled, the only surface exposed to the salt atmosphere on Long Island is the metallized coating, which is as sound as when it was first put on. The steel pipe has not been attacked at all.

Pipe Lines—Gas Holders. Another user laid a 12" pipe line in 1932. Extra heavy, double-dipped galvanized pipe was used because the line crossed numerous salt sloughs and marshes. All joints were welded and metallized with zinc where the galvanizing was burned off in welding. After 17 years the galvanized pipe has been eaten completely through and patched in many places; *but the metallized joints are still in perfect condition.*

Storage Tank, Riverhead Water District, Riverhead, Long Island, showing riser pipe being metallized in 1940. Tank interior had been metallized in 1933.

This same user metallized 10,000 sq. ft. of gas holders with only .003" zinc in 1932; touched up a few thin spots in 1941. Although continuously exposed to salt atmosphere and acid fumes from a nearby refinery, these metallized surfaces are still in first class condition.



Metallizing high-pressure gas holders.

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FREE BULLETIN. Bulletin 62—"Stop Corrosion with Metallizing" pictures many different types of jobs, such as bridges, structural steel, barges, dam gates; includes spray test and life expectancy charts.

Metco—Reg. U.S. Pat. Off.

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38-22 30TH STREET — METCO METHOD — LONG ISLAND CITY 1, N. Y.

R. J. McWaters
Metallizing Engineering Co., Inc.
38-22 30th St., Long Island City 1, New York

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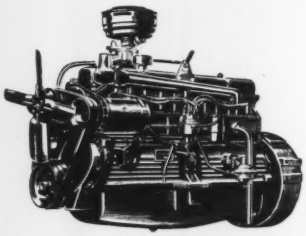

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- 60 MPH road speeds

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Continued from page 110

Meffert Creek and other over Oil Creek, Elk Co., to S. J. Groves & Sons Co., 53 Messenger St., Johnstown, **$995,417**; bit. surf. crushed aggregate base 4.49 mi., 3 rein.-con. arches and rein.-con. bridge, arches over Windfall Run, West Branch of Clarion River and over Sicily Run, Routes 42004, 42046 and 97, McKean Co., to Putnam & Greene, Inc., Philipsburg, **$661,808**. Bids 9/16. CD 9/20, under LB.

†Texas—National Park Service, Interior Bldg., Wash. 25, D. C., North Entrance Road, in Big Bend Natl. Park zone, **$50,000**; constr. Boquillas Rd., **$69,000**; constr. Santa Elena Rd., **$85,000**; Marathon area, Brewster Co., own forces. Grand total $204,000. CD 1/26.

Tex., Cooper—Delta Co., c/o Comrs. Court, Cooper, road grading, drainage, surf. Precinct 1, **$68,000**; Precinct 2, **$80,000**; Precinct 3 **$70,000**, force account. Grand total $218,000. CD 8/8.

EARTHWORK, WATERWAYS

BIDS ASKED

October 18

†Missouri—U. S. Eng., P. O. Box 97, Memphis, Tenn., levee work, incl. 140 lin ft. 48 in. corrugated metal pipe culvert, riprap paving, etc., St. Johns Bayou Levee Dist., Farrenburg, New Madrid Co., Serial No. CIVENG 40-041-50-46.

†New York—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, deepening Buffalo River, Second Stage, Buffalo Harbor, Serial No. CIVENG-30-023-50-9. CD 8/15.

†North Carolina, Virginia and Florida—U. S. Eng., 308 Customhouse, Wilmington, N. C., repairing fender sys. at Core Creek Bridge, N. C., Atlantic Interacoastal Waterway between Norfolk, Va. and St. Johns River, Fla., Serial No. CIVENG-31-075-50-11.

†Pennsylvania — U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Williamsport Flood Protection Proj., Levee Unit No. 6E, Williamsport, Lycoming Co., Serial No. CIVENG-18-020-50-7. CD 9/15.

October 19

La., Marrero—Municipal Drainage Dist., Marrero, pumping plant, equip., Sub Drainage Dist. 1. Plans deposit $10. Louis W. Hammett, 822 Perdido St., New Orleans, archt.

Ont., Toronto—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunters Bldg., Ottawa (Dominion Govt.) crib for Western Breakwater. Approx. $59,000. R. Blais, c/o owner, engr. CD 4/5.

October 20

†Idaho—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., excavation inlet channel, intake structure, tunnel and outlet structure and installation concrete, steel tunnel lining for 1,200 ft. 23 ft. tunnel for Lucky Peak Dam, Serial No. CIVENG-45-164-50-20. Extended date. CD 8/18.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, reservoir clearing on Dam "B" site in Neches River Basin, Jasper and Tyler Counties, Contr. 3, Inv. No. CIVENG-41-243-50-65. Contr. 4, Inv. No. CIVENG-41-243-50-66. Approx. $50,000 each. CD 6/9/44.

†Washington—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point f.o.b. cars Odair, Wash., aluminum three-rail crest railings for roadway on dam, incl. railing anchors, lenses and lighting fixtures and wiring, aluminum four-rail crest railings for spillway bridge, incl. railing anchors, lenses and lighting fixtures and wiring, one four-rail sample section crest railing all for Grand Coulee Dam, Columbia Basin Proj., Spec. 2806. L. N. McClellan, ch. engr.

†Wash., Seattle—U. S. Eng., 1735 E. Marginal Way, Zone 4, dredging Duwamish Waterway, CIVENG-45-108-51-21. CD 9/26.

October 21

†Colorado—Bureau Reclamation, Dpt. Interior, Paonia, earthwork, lining and structures, Station 145 plus 00 to 340 plus 00 and Station 686 plus 00 to 740 plus 00, Fire Mountain Canal, Paonia Proj., Spec. 2807. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

†Oregon—U. S. Eng., 628 Pittock Block, Portland, bank protection works along right bank of Middle Fork of Willamette River at A. C. Clearwater Pl., approx. 5 mi. southeast of Springfield, Lane Co., Serial No. CIVENG 35-026-50-122.

October 25

†North Dakota—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn., swimming beaches at Homme Reservoir, Park River, on south branch of Park River, approx. 3 mi. west of city of Park River, one each on north and south slopes of the reservoir.

†Utah—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Salt Lake City, radial gate, rollers, pin bearings, wall plates and gate sill; one 5,000 lb. hand-operated radial-gate hoist for the sluiceway at Duchesne Diversion Dam, Deer Creek Div., Provo River Proj., Spec. 2801.

October 26

†California—Bureau Reclamation, Dpt. Interior, Tracy, earthwork, concrete lining, structures, Station 4108 plus 50 to Station 4535 plus 00, Delta-Mendota Canal, Central Valley Proj., Spec. 2799. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

Bids Asked

Tex., Houston—J. Dealy Smallwood, Citizens State Bank Bldg., drainage, site development, Chocolate Bayou Rd. area. $45,000.

LOW BIDDERS

†Arkansas—U. S. Eng., 300 Broadway, Little Rock, cancelled bids to have been opened Sept. 16, Arkansas River Watershed Mill Bayou Outlet Ditch, Roland Drainage Dist., Arkansas River, Serial No. CIVENG-03-050-50-23. CD 9/21.

†Connecticut—U. S. Eng., Army Base, Boston, 10, Mass., Sept. 16, improvement dredging Greenwich Harbor, CIVENG 10-016-50-10, from Lavigne & Smith, Inc., 18 Taunton Ave., East Providence, R. I., **$207,750**, Est. $233,788. CD 8/26.

†Illinois—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, Sept. 20, dredging Calumet River and entrance channel, CIVENG-11-032-50-5, from Fitz Simms & Cornnell Dredge & Dock Co., 108 La Salle St., Chicago, **$146,562**, Est. $136,500.

Ia., Des Moines—State Conservation Comn., 914 Grand St., rejected bids Sept. 2, dam in Geode State Park, Des Moines and Henry Counties, L. B. **$375,114**. CD 9/12, under LB.

†Ia., Turin — Soil Conservation Service, 4400 N. Port Washington Rd., Milwaukee, Wis., Sept. 21, flood control works, Troy Minor Watershed, Little Sioux Basin, near here, from J. W. McNeill Constr. Co., Insurance Exchange Bldg., Sioux City, **$139,640**. CD 9/1.

La., New Orleans—New Orleans Union Passenger Terminal, Comm., 501 S. Saratoga St., Sept. 23, clearing, filling Basin Canal between point near Gen. Ogden St. and point 3,000 ft. north of Metairie Rd., from Boh Bros. Constr. Co., 2400 Cypress St., **$125,516**. CD 9/19.

†Mississippi, Tennessee and Arkansas—U. S. Eng., P. O. Box 97, Memphis, Tenn., Sept. 30, approx. 10,990 lin. ft. articulated concrete revetment, Burke Landing, Miss., Mile 632 AHP) and one bank of Mississippi River, between Memphis, Tenn. and Henrico, Ark., Helena, Ark. (Mile 857 AHP) and Westover, Ark. (Mile 647 AHP), Serial No. CIVENG 40-041-50-41, from Markham & Brown and L. L. Sanders, 4308 Emerson St., Dallas, Tex., **$433,640**. Est. $445,341. CD 9/22.

†Mississippi—U. S. Eng., P. O. Box 60, Vicksburg, Sept. 27, triangular frame retards in Mississippi River at Burke Landing, CIVENG-40-041-50-33, from Fordice Constr. Co., 42 Porter Bldg., Memphis, Tenn., **$574,528**, Est. $454,653. CD 9/14.

†Missouri—U. S. Eng., 1709 Jackson St., Omaha, Neb., Sept. 27, Schedule A. Sects 10, 11 and 12, Unit L-550 Agricultural Levee, near Rockport, Serial No. CIVENG 25-066-50-32, from Platte Valley Constr. Co., Grand Island, Neb., **$195,566**. CD 9/6.

●†Montana—Bureau Reclamation, Dpt. Interior, Columbia Falls, Sept. 20, clearing 15,765 acres land in Hungry Horse Reservoir area, Hungry Horse Proj., 12 to 45 mi. southeast of Columbia Falls, on Spotted Bear Rd., Spec. R1 HH10, from Coleman H. Dykes, 2122 Old Maryville Pike, Knoxville, Tenn., **$5,677,000**. The bid was opened after a thorough check with the postal authorities of mail bids mailed early enough for official opening. CD 9/27, under LB.

†Texas — U. S. Eng., 606 Santa Fe Bldg., Galveston, Sept. 29, dredging tributary channel to Aransas Pass, incl. turning basin at Aransas Pass and Port-Aransas-Corpus Christi Waterway, Inner Basin at Harbor Island, Nueces Co., CIVENG 41-243-5-47, from Bauer-Smith Dredging Co., Inc., P.O. Box BB, Port Lavaca, **$233,166**. Est. $190,482. CD 9/13.

CONTRACTS AWARDED

†Oregon — U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., mfg. installing miter gate, appurtenances, operating machinery, stop-logs and stop-log lifting beams for navigation lock at McNary Dam, CIVENG-45-164-50-4, to Consolidated Western Steel Corp., 5700 S. Eastern Ave., Los Angeles, Calif., **$641,280**. Bids 8/23. CD 8/30, under LB.

AIRPORTS AND AIRBASES

BIDS ASKED

October 19

†N. Y., Mitchel Field (P. O. Hempstead)—GROUND CONTROL APPROACH FACILITIES—U. S. Eng., 120 Wall St., New York, Zone 5, ground control approach facilities.

October 21

N. Y., Idlewild—FIRE PUMPING STATION IMPRVS.—At office of City Engineer, Port of New York Auth., 111 8th Ave., New York, Zone 11, piping, plumbing and heating sys., Contr. NYA-110, electrical systems, Contr. NYA-111, for fire pumping station, New York International Airport. Plans deposit $25 each. CD 4/27/44.

†Va., Gravelly Point—CONTROL TOWER—Pub. Bldgs. Admin., General Service Admin., Lemon Bldg., 1729 New York Ave. N. W., Wash. 25, D. C., control tower at Terminal Bldg., Washington Natl. Airport, Proj. No. 44-094-6. Plans deposit $5.

October 24

Tex., McCamey—AIRPORT—Upton Co., McCamey, airport and administration bldg. $90,000. Allied Engineers, Inc., Fort Worth Bank Bldg., Fort Worth, engr. Bids 9/26 rejected, L. B. **$75,706**. CD 9/9.

LOW BIDDERS

†Ill., Belleville—HOUSING—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, rejected bids Aug. 10, two series five 2 story, 24x66 ft., 8 unit masonry row houses, 1 story, 15x21 ft. boiler room, LB **$615,000** and **$738,000** exterior utilities, pavements, LB **$228,400** and **$235,850**, Scott Air Force Base. CD 8/23, under LB.

Mass., East Boston—DRAINAGE SYSTEM—Commonwealth of Massachusetts, Airport Management, Logan Airport, Sept. 26, storm drainage sys., Logan Airport, from A. P. Keegan, 125 Halleck St., Roxbury, **$161,921**. Thompson & Lichtner Co., Inc., 8 Alton Pl., Boston, engr. CD 9/21.

Mass., East Boston—LOADING APRON—Commonwealth of Massachusetts, Airport Management, Logan Airport, Sept. 26, plane loading apron, facilities, Airport Line Station S-11, General Edward Lawrence Logan Airport, from M. De Matteo Constr. Co., 200 Hancok St., Quincy, **$227,855**. Coolidge, Shepley Bulfinch & Abbott, 1 Court St., Boston, archts. CD 9/21.

Wis., La Crosse—AIRPORT IMPRVS.—City rejected bids Sept. 19, airport imprvs., incl. paving, LB. **$67,682**. CD 9/28, under LB.

CONTRACTS AWARDED

Wash., Seattle—APRON PAVING—Northwest Airlines, Wold-Chamberlain Airport, Minneapolis, Minn., concrete paving 8,800 sq. yd. apron at Seattle-Tacoma Airport, to Meade Sand & Gravel Co., Auburn, **$66,500**. CD 9/30.

B. C., Jericho Beach—HEATING SYSTEM—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., heating system at Royal Canadian Air Force Station, to Acme Plumbing & Heating Service, 114 Water St., Vancouver, Approx. **$139,235**.

Ont., Trenton—RUNWAY, etc.—Canadian Commercial Corp., 70 Lyon St., Ottawa, runway and drainage sys. exten. at R.C.A.F. Station, to H. J. McFarland Constr. Co., Elizabeth St., Picton. Approx. **$245,000**.

Que., Bagotaville — RUNWAYS — Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., runway extens., at R.C.A.F. Station, to North Shore Constr. Co., 307 Castle Bldg., Montreal, Approx. **$180,354**. CD 7/8.

PUBLIC BUILDINGS

BIDS ASKED

October 18

●Minn., Rochester — RECEIVING and TREATMENT — State Dpt. Admin., P. T. Peterson, dir. Purchases, 19 East Capitol, St. Paul, 2 story, part bsmnt., rein.-con. walls, brick receiving and intensive treatment building at State Hospital, Approx. **$1,000,000**. Ellerbe & Co., E. 505 First Natl. Bank Bldg., St. Paul, archts. CD 10/17/47.

†N. Y., Canandaigua—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., replacing masonry wall at Veterans Admin. Hospital. CD 8/2/45.

N. Y., Dongan Hills—HOUSE IMPRVS.—New York City Housing Auth., 63 Park Row, New York, Zone 7, street and yard imprvs. for General Charles W. Berry Houses, Proj. No. NYC 19, in area bounded by Richmond Rd., Dongan Hills Ave., Staten Island Rapid Transit and Seaver Ave., Richmond Boro. Plans deposit $24.

N. Y., Rego Park—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract P. S. 175, east side of 97 St. from 64 Rd. to 65 Ave. Plans deposit $15.

O., Cleveland—HOSPITAL—Dpt. P. Wks., State Office Bldg., Columbus, 1 story, bsmnt., 2 wings, 75x65x149 ft., brick, block, Cleveland State Receiving Hospital, $500,000. Plans deposit $20. McGeorge Hargett & Assoc., 7016 Euclid Ave., engrs.

R. I., Wickford — HIGH SCHOOL — Town, School Dpt., Town Hall, 1 story high school addn., alterations. Approx. $250,000. Plans deposit $35. Howe, Prout & Ekman, 17 Custom House St., Providence, archts. CD 9/16.

S. C., Spartanburg—SCHOOL—Spartanburg Co., Cleveland Junior High School, plans deposit $50, Frank Collins, Spartanburg, archt., Craver High Schools. Plans deposit $50. Harold Woodward, Spartanburg, archt.

†Wis., Milwaukee — POST OFFICE — Public Bldgs. Admin., 433 W. Van Buren St., Chicago, Ill., post office imprvs. $150,000-$200,000. Extended date. CD 9/8.

Ont., Kirkland Lake — SCHOOL — J. C. Tuck, secy., Collegiate & Vocational Institute Bd., Kirkland Lake, 2 story school addn. Approx. $250,000. B. Brown & Brisley, 12 Bloor St. E., Toronto, archts. CD 9/19/45.

October 19

N. Y., Dongan Hills—HOUSE IMPRVS.—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting for General Charles W. Berry Houses, Proj. No. NYC-19, in area bounded by Richmond Rd., Dongan Hills Ave., Staten Island Rapid Transit and Seaver Ave., Richmond Boro. Plans deposit $24.

Tenn., Dandridge—HIGH SCHOOL—Jefferson Co., Dandridge, high school. $250,000. Extended date. Rutherford & Painter, Day-

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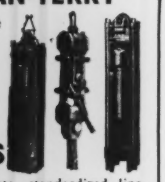

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light Bldg., Knoxville, archts. CD 9/2.

Tenn., Memphis — PHYSICAL EDUCATION — At office R. W. Jarrell, state purch. agt., State Office Bldg., Nashville, general contract physical educ. bldg., for Memphis State College, Plans deposit $100; heating and ventilating, plumbing and electrical work, Plans deposit $50. Eason, Anthony, McKinnie & Cox, Inc., 711 Sterrick Bldg., Zone 3, archts.

About October 20

Conn., New London — HOUSING — City of New London, New London Housing Auth., Richard H. Pugh, chn., 96 two story, frame garden type family units, Colman St. $900,000. Schoifield & Lindsay, 309 State St., archts. CD 7/11.

†Ga., Augusta — DIET KITCHENS — U. S. Eng., Post Office Bldg., Savannah, altering diet kitchens, Oliver General Hospital, Extended date. CD 8/18.

October 20

Fla., Daytona Beach—COURTHOUSE—Volusia Co., Daytona Beach, courthouse alterations, addns. Plans deposit $50. Harry M. Griffin, Daytona Beach, archt.

●Kan., Merriam—SCHOOL—Shawnee Mission School Dist., Merriam, high school, $2,684,000. Extended date. Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., and Marshall & Brown, 114 W. 10 St., Kansas City, Mo., archts. CD 7/25.

La., Bogalusa—SCHOOL—School Bd., M. J. Israel, supt., Bogalusa, 2 story brick Long Ave. School. Plans deposit $25. Wm. R. Burk, Pan American Bldg., New Orleans, archt. CD 6/15/44.

●Mass., Boston — INFIRMARY — Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Proj. P-M38 infirmary bldg. and exten. tunnel, services, State School, Belchertown, Approx. $1,000,000. Plans deposit $25. Kendall Taylor & Co., Inc., 221 Columbus Ave., Boston, archt. Cleverdon-Varney-Pike, 120 Tremont St., engrs. CD 9/20/46.

†Mo., Rolla — EXPERIMENT STATION — General Services Admin. P. Bldgs. Admin., F St. between 18 and 19 Sts. N. W., Wash., D. C., reconstruction Bureau Mines Experiment Station, Proj. No. 23-104. Plans deposit $10.

†N. M., Albuquerque—HEATING PLANT—U. S. Eng., P. O. Box 1538, central heating plant, Sandia Base. Serial No. 291-50-07. CD 9/14.

O., Toledo—RECEIVING—Dpt. P. Wks., S. O. Linzell, dir., Columbus, 2 story, bsmnt. receiving bldg. at Toledo State Hospital, $500,000. Britsch & Munger, Nicholas Bldg., archts. CD 4/5/48.

Pa., North Huntingdon Twp. (near Greensburg)—HIGH SCHOOL—School Dist. North Huntingdon Twp., Irwin, 2 story, brick, irregular shape, steel Junior-Senior High School. $850,000. Sorber & Hoone, First Natl. Bank, Greensburg, archts. CD 7/9/48.

Ont., Toronto—GARAGE, etc.— J. E. Perkin Assocs., archts., 717 Church St., 2 story T-shaped, 90x90 ft. structural steel, truck garage, 43x55 ft. office section and 51x116 ft. warehouse, concrete floors, for York Twp. Hydro-Electric System, Keele & Flora Sts. Approx. $225,000. Plans deposit $25.

October 21

N. Y., Greenburgh (Scarsdale P. O.) — SCHOOL—Bd. Educ., Union Free School Dist. 6, general constr., plumbing, heating and ventilating and electrical work primary school, Glendale and Ardsley Rds. Plans deposit $10. Moore & Hutchins, 215 E. 37 St., New York, Zone 16, archts.

†N. Y., Port Jervis—POST OFFICE REPAIRS—Pub. Bldgs. Admin., 731 Customhouse, New York, Zone 4, misc. repairs to U. S. Post Office. **FWA.**

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., concrete, steel, frame, concrete Lamar High School addn., gymnasium, $250,000. Extended date. Stayton Nunn, 2525 Ralph St., co-ord. archt. Kenneth Franzheim, 2306 Crawford St., engr. CD 9/15.

October 24

N. C., Buxton — SCHOOLS — Dare Co. Bd. Educ., Manteo, 260x294 ft. elementary and high school. Plans deposit $25. B. H. Stephens, New Bern, archt.

Ont., Bowmanville — HOSPITAL—Memorial Hospital Bd., 2 story I-shaped, masonry, steel, concrete 50 bed hospital. Approx. $500,000. H. J. Smith, 62 Charles St. E., Toronto, archt. G. L. Wallace, 35 Isabella St., Toronto, engr.

October 25

La., Baton Rouge — SCHOOL — East Baton Rouge Parish School Bd., Brookstown School. $290,000. Goodman & Miller, North Blvd., Baton Rouge, archts. CD 7/18, under LB.

La., Baton Rouge—SCHOOL—East Baton Rouge Parish School Bd., City Hall, Chaneyville Junior High School. Plans deposit $22; Central Auditorum, Gymnasium and Cafeteria Bldg. Plans deposit $18. $125,000. Hodgman & Murrell, 713 Reymond Bldg., archts. CD 5/4/44.

●Miss., Laurel — HOSPITAL — Jones Co., Laurel, hospital. $1,350,000. Extended date. Charles H. McCauley, Jackson Bldg., Birmingham, Ala., archt. CD 9/20.

October 26

Tex., Prairie View College—DORMITORY—Agricultural & Mechanical College of Texas, College Station, girls dormitory. $300,000. Plans deposit $50. Carleton W. Adams, 228 Admin. Bdg., College Station, A & M System archt. CD 9/28, under LB.

Puerto Rico, San Juan—Municipal Housing Auth., Caserio San Antonio, Avenida Fernandez Juncos, Puerta de Tierra, 252 apartments in 5 rein.-con. bldgs., incl. utilities, site imprvs., on site of Puerta de Tierra Development (Caserio Puerta de Tierra) Proj. P. R. 2-3-1B. Plans deposit $100. CD 7/7/48.

October 27

Calif., Baldwin Park — SCHOOL — Baldwin Park School Dist., Baldwin Park, Intermediate School, $387,000. Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, archts. CD 2/11.

†Calif., Oakland—BARRACKS—U. S. Eng., 180 New Montgomery St., San Francisco, 225-man barracks for enlisted men, Oakland Army Base, Job 2934, Serial ENG-04-203-50-104.

†Montana—SUBSTATION, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars at Coram, one 6,000 kva 14,400 to 2,400 grounded Y/1, 385 volt, double ended indoor-type master unit substation, with non-inflammable, liquid immersed self cooled transformers; one 1,500 kva 2,400 to 480 grounded Y/277 volt double ended indoor-type station-service unit substation with non-inflammable, liquid, immersed self-cooled transformers; one 1,000/1,150 kva 2,400 to 480 grounded Y/27 volt double ended indoor-type station-service unit substation with non-inflammable liquid immersed self cooled air cooled transformers; one 500 kva 2,400 to 490 grounded Y/277 volt single ended indoor-type heating power unit substation with dry type self cooled transformers; ten 460 volt indoor-type power control centers, designated M1A, M2A, M3A, M4A, M8A, M8B, MSC, MSD, MSE, and MSF; four 460 volt indoor-type heating control centers, designated N1A, N4A, N8A and N8B; one 115/230 volt indoor-type heating control center designated NCB; one 125 volt direct current indoor-type power distr. switchboard, designated B8A; one 125 volt direct current, indoor-type power distr. switchboard, designated B8B; four 208 grounded Y/120 volt 4 wire, 3 phase lighting distr. panels; one 230 volt alternating-current indoor-type heating power distr. panel, Hungry Horse Power Plant, Hungry Horse Proj., Spec. 2794.

Ore., Portland—SCHOOL—School Dist. 1, 631 N. E. Clackamas St., 17 classroom, Harry W. Scott School, N. E. Prescott and 67 Sts., central portion rein.-con., wings of frame and brick veneer. $750,000. Plans deposit $50. Whitehouse, Church, Newberry & Rohr, Builders Exchange Bldg., archts. CD 6/1/44.

October 28

Miss., Tupelo—HOSPITAL—North Mississippi Community Hospital, c/o Robert B. McKnight, archt., Tupelo, hospital, $305,000. CD 6/6.

Tex., Stephenville—SCIENCE WINGS—John Tarlton State College, Stephenville, science wings. $250,000. Plans deposit $50. Carleton W. Adams, 228 Admin. Bldg., College Station, A & M System Archt. CD 9/30.

Bids Asked

O., Warren—HIGH SCHOOL—Bd. Educ., Warren, Central Junior High School. $900,000. Keich & O'Brien, 912 Union Savings & Trust Bldg., Zone 1, archts. CD 2/27/46.

LOW BIDDERS

†Calif., Los Angeles — POST OFFICE — Pub. Bldgs. Admin., General Services Admin., F St. between 18 and 19 St. N.W., Wash., D. C., Sept. 27, post office bldg. addn. at Terminal Annex, from Zoss Constr. Co., 1037 Cole Ave., Los Angeles. **$642,000.** Est. over $500,000. CD 8/18.

Calif., Oakland — SCHOOL — Oakland Bd. Educ., 1025 2 Ave., Sept. 27, 2½ story, 50,000 sq. ft. rein.-con. Belle Vista School, from Carl N. Swenson Co., Box 558, San Jose. **$538,213.** CD 9/7.

Calif., San Andreas.— HOSPITAL — Mark Twain Hospital Dist., Courthouse, rejected bids Aug. 25, 1 story, rein.-con. hospital. L. B. **$587,500.** CD 7/20.

N. J., Montclair — SCHOOL — Bd. Educ., Montclair, Hillside School alterations, addns., from Frank W. Hogert, 324 Railroad Ave., Hackensack, **$932,868.** CD 1/4.

●N. Y., Elmira—DINING ROOM, etc.—Dpt. P. Wks., Albany, Sept. 28, general contract Bldg. No. 16, dining room and kitchen, dry and cold storage bldg., at Elmira Reformatory, from C. D. Rich Co., Inc., 191 Park Ave., New York Zone 17. **$1,043,000.** CD 9/13.

Va., Wytheville — HIGH SCHOOL — Bd. Educ., Wytheville, Sept. 27, high school, from Clark Bros., Stuart, **$551,990.** CD 4/26/46.

Wash., Seattle—CONTROL—City, County-City Bldg., Sept. 28, control bldg., crane tower, yard walls, equip, foundations, duct runs, etc., for Broad St. Substation, from S. S. Mullen, Inc., 9 Ave. N. and Roy St., **$496,098.** CD 9/9.

B. C., Victoria — OFFICE — British Columbia Power Comn., 918 Government St., Sept. 30, 3 story 34,000 sq. ft. rein.-con. office, from Northern Constr. Co. & J. W. Stewart Ltd., 1304 Hornsby St., Vancouver, **$473,800.** CD 9/14.

Continued on page 117

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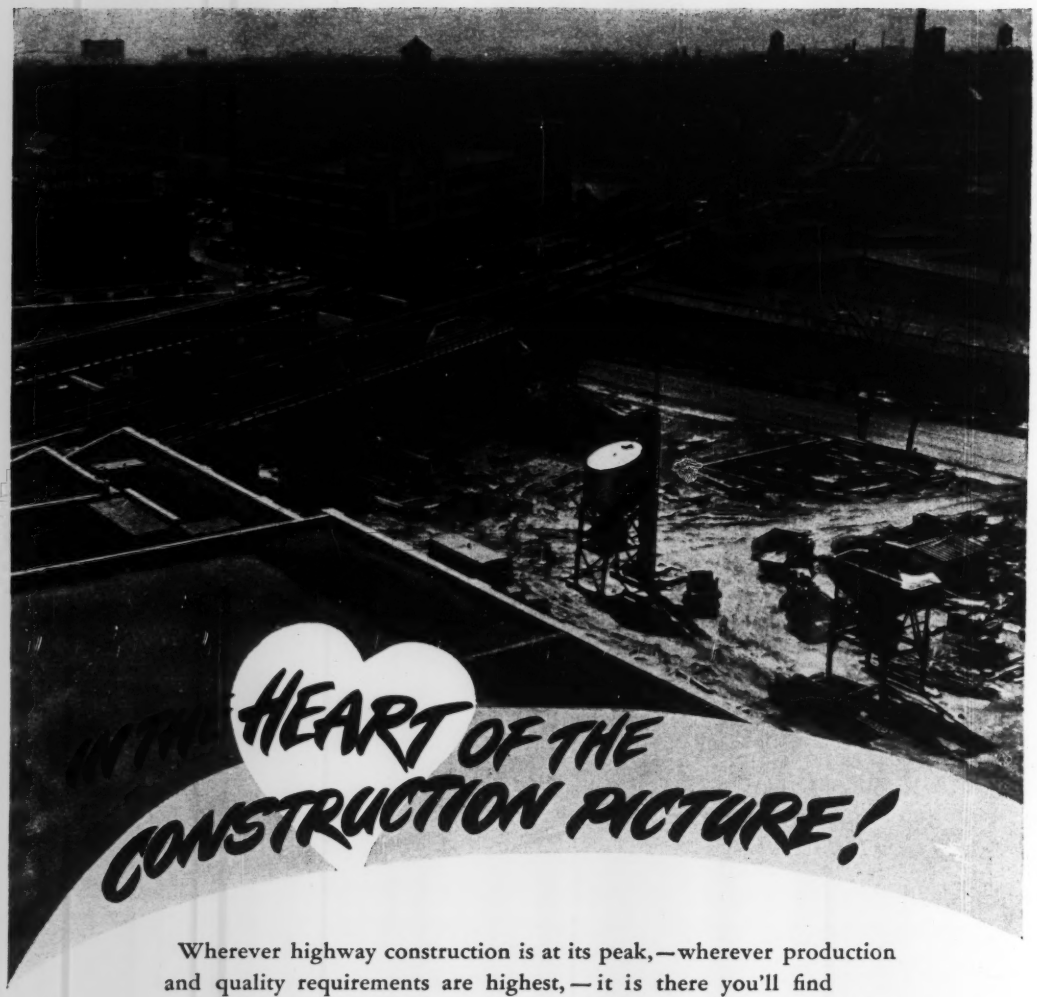

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Continued from page 114

Ont., New Toronto—SCHOOL—High School Bd., C. Farrow, chn., Sept. 20, 2 story, bsmnt., rein.-con. brick U-shaped vocational and high school, Birmingham and Eighteenth Sts., from Jackson-Lewis Co., Ltd., 80 King St. W., Toronto. Approx. **$750,000.** CD 9/2.

CONTRACTS AWARDED

Ark., Conway—HALL—Arkansas Teachers College, Conway, general contract Bernard Hall for Women alterations, addns., to The Baldwin Co., 213 Wallace Bldg., Little Rock*** plumbing and heating, to E. W. Daniel Plumbing & Heating Co., Inc., 1418 W. 9 St., Little Rock***electrical wiring, to R. & J. Electric Shop, 1023 W. 3 St., Little Rock. Approx. **$400,000.** Bids 9/23, CD 9/1.

D. C., Wash. — SCHOOL — Distr. Comrs., District Bldg., Oxon Run School, 4 St. and Mississippi Ave. S.E., to George Hyman Constr. Co., 1010 Vermont Ave., **$652,000.** Bids 9/20, awarded 9/21. CD 9/23, under LB.

Fla., Tallahassee—POWER PLANT—City, furnishing circuit breakers and control equip. for new power plant substations, to Westinghouse Electric & Mfg. Co., Union Bank Bldg., Pittsburgh, Pa., **$104,934**; transformers for substation for municipal power plant, to General Electric Co., Red Rock Bldg., Atlanta, Ga., **$187,810.** Awarded 9/27. CD 6/13/48.

●Ill., Quniey — COURT HOUSE, etc.—Bd. Supervs. Adams Co., City of Quincy, mayor, Old City Hall, 4 story concrete, steel, brick, stone county court house and city hall, to L. & R. Constr. Co., 6609 Latta Pl., St. Louis, Mo., **$1,729,885.** Bids 8/25. CD 9/15, under LB.

Ill., Zion—SCHOOL—Bd. Educ., Dist. 6, H. Lundahl, supt., 2 story, bsmnt., steel, brick, stone school, to Ashland Constr. Co., 6808 N. Clark St., Chicago, Zone 26, **$550,000.** Awarded 9/15. Estrand & Schad, 117 Genesee St., Waukegan, archts.

●Ind., West Lafayette — DORMITORY — Purdue University, West Lafayette, 3 and 4 story, steel, concrete dormitory, chemistry and agriculture bldgs., George A. Fuller Co., 111 W. Washington St., Chicago, 2, Ill., **$2,607,000.** CD 9/19. Bids 9/27, awarded 9/30.

●†Md., Baltimore—HOSPITAL—U. S. Eng., P. O. Box 1715 24 St. and Maryland Ave., Zone 3, general contract veterans administration hospital, quarters, service bldgs., utilities, to Consolidated Eng. Co., Inc., 20 E. Franklin St., **$1,853,000.** Bids 9/20, awarded 9/28. CD 9/22, under LB.

Mass., Belmont—HOUSING—Town of Belmont Housing Auth., Town Hall, Aug. 10, veterans housing, between Thomas and Waverly Sts., to John Bowen Co., 129 Newbury St., Boston, **$874,000.** Bids 8/10, awarded 9/16. CD 8/16, under LB.

●Mass., Brookline—HOUSING—Town of Brookline Housing Auth., Town Hall, Sept. 14, 153 unit Veterans Housing Proj. 200-1, Chestnut and High Sts., to John Bowen Co., 129 Newbury St., Boston, **$1,396,100.** Bids 9/14, awarded 9/19. CD 9/20, under LB.

●Mass., Holyoke — SOLDIERS HOME — Commonwealth of Mass., Admin. & Finance Dpt., State House, Boston, soldiers home, Cherry St., to M. Slotnick Corp., 323 Washington St., Boston, **$1,979,333.** Bids 9/23, awarded 9/27. CD 9/29, under LB.

●Mass., Medford—HOUSING—City Housing Auth., City Hall, Sept. 23, veterans housing, Riverside Ave., to G. L. Ruge & Sons, Inc., 80 Boylston St., Boston, **$1,394,000.** Bids 9/23, awarded 9/26. CD 9/29, under LB.

Mich., Ann Arbor — HIGH SCHOOL — Bd. Educ., H. F. Hansen, 2 story, 310x223 ft., brick, block, tile, concrete, reinforcing steel, structural steel, Junior High School, to North Moller Co., 401 N. Jackson St., Jackson, **$1,100,000.**

†N. Y., Schenectady — ADMINISTRATION BLDG.—U. S. Atomic Energy Comn., c/o General Electric Co., Oliver Rd., administration and security bldg., fire station, equip. maintenance shop, carpenter and machine shop, warehouse, completing access road, clearing, rough grading, drainage, site roads and pavements, steam and electrical distr. sys., sewage collection, sewage disposal and water distr. sys., water tank at West Milton, Inv. AE 50-SCH-1 to Thompson Constr. Co., 11 N. Pearl St., Albany, **$560,311.** Bids 9/20. CD 9/27, under LB.

●†S. C., Columbia—REGIONAL OFFICE—Pub. Bldgs. Admin., General Service Admin., 18 and F Sts., N. W. Wash. 25, D. C., office bldg., to Ray M. Lee Co., Edgewood Ave., N. E., Atlanta, Ga., **$1,058,812.** Bids 9/22. CD 9/27, under LB.

Tex., Austin — SCHOOL—Bd. Educ., c/o Trustees, 701 E. 11 St., Units A, B and C, Oasis School, in Tarrytown Dist., to Yarbrough Constr. Co., Box 851, **$573,985.** Bids 9/28. CD 10/3, under LB.

●Tex., Denton—HOME ECONOMICS AND DORMITORY—Texas State College for Women, Bd. Regents, Denton, home economics and dormitory, to Price Constr. Co., Box 593, Marshall, **$1,097,134.** Bids 9/29. CD 10/4, under LB.

●Va., Charlottesville — DORMITORY — State of Virginia, Richmond, general contract dormitory Group 1 to 10, to Charles W. Barker & Sons, Lexington, **$1,761,179;** heating, ventilating and plumbing, to S. H. Guza, 1211 Hermitage Rd., Richmond, **$317,844.** Bids 9/16. CD 9/22, under LB.

Va., Lynchburg — SCHOOL — City, William Marvin Bass School, Fairview Heights, to W. T. Jones, Lynchburg, **$500,028.** Bids 8/1. CD 8/17, under LB.

B. C., Vancouver — HOUSING — Central Mortgage & Housing Corp., 360 Homer St., 119 frame housing units, to W. J. Dick, Ltd., 3259 West 15 Avenue, **$710,000.** Bids 9/21, awarded 9/30.

B. C., Vancouver — GYMNASIUM — Province of British Columbia, Parliament Bldg., Victoria, reinforced concrete gymnasium at University of British Columbia, to Dawson & Hall Ltd., 775 Clark Dr., **$547,700.** Awarded 10/1. CD 8/2, under LB.

N. S., Halifax—HOUSES—Central Mortgage & Housing Corp., 1032 Gottingen St., 88 houses, to Gomac Constr. Co., and Eastern Woodworkers, Brother St., New Glasgow, Approx. **$600,000.** F. J. Mongan, c/o owner, engr. CD 9/23.

COMMERCIAL BUILDINGS

BIDS ASKED

October

Md., Baltimore—OFFICE and DELIVERY—Delivery of Baltimore Inc., 205 W. Center St., 13x263x338 ft., brick steel and concrete office and delivery center, approx. 1,250,000 cu. ft., James R. Edmunds, Jr., 103 W. Hamilton St., archt. Crout, Snyder & Crandall, 20 E. Lexington St., structural engr. Henry Adams, Inc., 2315 St. Paul St., mechanical engr.

Md., Towson — RESIDENCE HALL, etc. — Gloucher College, St. Paul and 23 Sts., Baltimore, 2 and 3 story 4 unit Residence Hall 3, $850,000. Moore & Hopkins, 215 E. 37 St., New York, N. Y., archts., Henry Adams, 2315 St. Paul St., Baltimore, mech. engr. CD 9/18/44.

October 18

Mass., Lenox — SCHOOL—Society of the Fathers of Mercy, Rector, Box 963, rebuilding 3 story, bsmnt., brick, stone school, Our Lady of Mercy Seminary, Approx. $250,000. Hampson & Fisher, 30 Backman Ave., Pittsfield, archts. R. D. Kimball Co., 6 Beacon St., Boston, engr. CD 2/21.

●Pa., Harrisburg — HOSPITAL — Polyclinic Hospital, 3 St. and Polyclinic Ave., general contract, heating, plumbing, electrical work and elevators for addns., bldg. to hospital, $2,792,220. Plans deposit $50. Lawrie & Green, 321 N. Front St., archts. CD 11/29/48.

October 19

N. C., Asheboro — HOSPITAL — Randolph Hospital, Inc., C. W. McCrary, pres. Bd. Trustees, Asheboro, 3 story 71,584 cu. ft. front addn. to hospital. Plans deposit $30 general, $20 mechanical. Eric G. Flannagan, Henderson, engr. and archt.

Tenn., Cleveland — CHURCH — First Baptist Church, c/o Selmon T. Franklin, archt., 421 Poplar St., Chattanooga, church.

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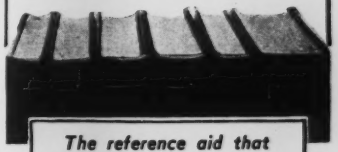

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October 20

La., New Orleans — INTERNES—Charity Hospital of Louisiana 1532 Tulane Ave., 5 story, masonry, concrete, limestone male internes bldg. Plans deposit $25. Extended date. August Perez & Assoc., Audubon Bldg., archts. CD 9/20.

●**Tex., Houston**—HOSPITAL, etc.—Methodist Hospital, 3020 San Jacinto St., 8 story, bsmnt., reinforced steel frame, brick, stone masonry 300-bed general hospital, partial air-conditioning in Tex Medical Center, $3,500,000; laundry, $75,000. Plans deposit $100. Watkin, Nunn, McGinty & Phenix, 2017 W. Gray St., archts. Walter P. Moore, 4605 Montrose St., Ray L. Jenkins, mech. engr., 4316 Blossom St. CD 6/14.

October 21

Minn., Northfield—DORMITORY—St. Olafs College, C. M. Granskau, pres., 4 story, 40x180 ft., rein.-con., brick, stone, Gothic style girls' dormitory, $400,000. Extended date. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, archts. CD 1/12/49.

October 26

Tex., Brownsville—HOSPITAL—Mercy Hospital, Brownsville, 3-story, 42-bed structural steel hospital unit, concrete pier and beam fdn. $603,000. Page, Southerland & Page, 602 West Ave., Austin, archts. Wilson & Cottingham, Littlefield Bldg., Austin, structural engrs. Landauer & Guerrero, 4501 Lemmon St., Dallas, mechanical engrs. CD 5/24.

Bids Asked

Tex., Beaumont — APARTMENTS — Hollywood Village Corp., c/o Robert W. Clemens, pres., 4110 Dennis St., Houston, 90 apartment units for 20 separate bldgs., Hollywood Ave., $450,000; 60 apartment units for 15 bldgs., adjacent to 11 St., $300,000. Robert W. Clemens & Assoc., c/o owner, archts. CD 9/13.

Tex., Corpus Christi—RESIDENCES—Corpus Christi, Inc., c/o Lee Aiken, Airport Rd., 100 frame, masonry residences, concrete slab fdn., on 22 acre tract off S. Staples St. $750,000. CD 6/6.

SOON LETS CONTRACT

Ala., Birmingham — APARTMENT—Marvin Warner & Joe Kanter, c/o Pembleton & Mims, archts., Title Guarantee Bldg., Birmingham, soon lets contract 10 story apartment, approx. $500,000.

Ark., Hope — CHURCH — First Baptist Church, c/o McAninch & Mahnker, archts., Exchange Bldg., Little Rock, soon lets contract church, $250,000. CD 8/12.

Calif., Lodi—TELEPHONE EXCHANGE—Pacific Telephone & Telegraph Co., 140 New Montgomery St., San Francisco, soon lets contract telephone exchange approx. $250,000. Hervey P. Clark & J. F. Beuttler, 210 Post St., San Francisco, archts.

Ill., South Holland—CHURCH—First Reformed Church, 157 and Chicago Rd., soon lets contract steel, concrete church, dining hall, library and kitchen, $265,000. Herbert H. Brand, 400 W. Madison St., Zone 6, archt. CD 6/3.

Ind., Indianapolis — CHURCH — Fairview Presbyterian Church, 46 St. and Kenwood Ave., soon lets contract 1 story, bsmnt., brick, stone church. $300,000. O. A. Tislow, Archts. & Bldrs. Bldg., archt.

●**Kan., Kansas City** — HOTEL — Wyandotte Hotel Co., 3552 Wood St., soon lets contract hotel, $2,000,000. Extended date. E. J. Stern, 20 W. 9 St., archt. CD 9/13.

●**Mich., Detroit**—HOSPITAL—Sisters of St. Joseph of Nazareth, soon lets contract 5 story, bsmnt., 200x350 ft., rein.-con., steel, masonry hospital, $4,000,000. Magoulo & Quick, 1305 Maccabees Bldg., archts.

Mo., St. Louis—STORE, etc.—Evrow Realty Co., c/o Wedemeyer & Hecker, archts., 310 Cotton Belt Bldg., 111 N. 4 St., Zone 2, soon lets contract 2 story, bsmnt., masonry, steel store and office, Riverview Blvd. and McLaren Ave.

Mo., St. Louis — HOSPITAL—Frisco Employees' Hospital Assn., Bd. Trustees, John T. Williams, bus. mgr., 4960 Lacledе Ave., Zone 8, soon lets contract hospital alterations, 4 story, bsmnt., 43½x65 ft. south center wing addn., 4 story, 16x20 ft. north solarium addns. for hospital. Preston J. Bradshaw & Associates, 1800 Olive St., Zone 3, archts.

Tex., Bryan — CHURCH — College Avenue Baptist Church, Bryan, soon lets contract church, $300,000. Norton & Mayfield, 1505 S. College St., archts. Lockwood & Andrews, Union Natl. Bank Bldg., Houston engrs. CD 9/13.

Tex., Fort Worth — CHURCH — Riverside Baptist Church, c/o Rev. Judson Prince, pastor, 3919 Race St., soon lets contract 1 and 2 story, brick, tile church, concrete fdn., Riverside Dr. $250,000. Easterwood & Easterwood, Brewley Bldg., archts. CD 9/26.

Tex., San Antonio—BANK, etc.—Alamo National Bank, Reagan Houston, pres., Commerce and St. Marys Sts., soon lets contract reconditioning, remodeling 23-story bank and office, incl. refrigeration unit. $450,000. Plans deposit $25. Extended date. C. Rinard, 2010 Alamo Natl. Bldg., archt. Halsey & Boyer, 2107 Transit Tower, engrs. Matthews & Kenan, 1908 Transit Tower, structural engrs. CD 9/28.

Wis., Eau Claire—HOSPITAL—Luther Hospital, Eau Claire, soon lets contract 3 story, brick, concrete hospital addn. Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Ill., archts. CD 9/27.

Que., Verdun—CHURCH—J. Sawyer, archt., 1207 Guy St., Montreal, soon lets contract 1000 seat rein.-con., steel church, Bannantyne and Moffat Aves., for Roman Catholic Parish of St. Thomas More. Rev. E. J. Lapointe, p.p., 980 Moffat Ave., Approx. $300,000.

LOW BIDDERS

N. C., High Point — BUILDING — Young Men's Christian Assoc. of High Point, High Point, Sept. 23, Y.M.C.A. Bldg. from Colfane & Graham, High Point, **$353,600,** Alt. 1 **$50,800,** Alt. 2 **$14,425.** CD 9/1.

●**Tex., Odessa**—HOTEL—Odessa Civic Hotel Corp., c/o Preston W. Cors, Secy., Chamber of Commerce, Odessa, rejected bids Aug. 31, 7 story, bsmnt., 150 room concrete, brick, hollow tile, cut stone hotel, pier and beam fdn., air-conditioning, 2 electric passenger and one freight elevators. **$1,600,000.** CD 8/15.

Vt., Montpelier—HOSPITAL—Heaton Hospital, Seminary Hill, Sept. 23, hospital alterations, addn., from H. P. Cummings Constr. Co., 14 Prospect St., Ware, Mass. **$647,647.** CD 9/14.

CONTRACTS AWARDED

Calif., Oxnard—DWELLINGS—Oxnard Imprvt. Co., 5655 Wilshire Blvd., Los Angeles, 74 frame, stucco dwellings, Saviers Rd., to Baruch Corp., 5655 Wilshire Blvd., Los Angeles. Approx. **$407,000.**

D. C., Wash.—APARTMENT—Capitol Plaza Apartments, Inc., 1627 K St. N.W., 8-story, brick, concrete apartment incl. 110 units, 34 E St. N.E. to Harry R. Loveless, 1627 K St. N.W., **$180,000.** Awarded 9/16. M. Mesrobian, 6810 Connecticut Ave. N.W., archt.

D. C., Wash. — APARTMENT — Gelmarc Towers, Inc., 2730 Wisconsin Ave., N. W., 8 story, brick, concrete block 148 unit apartment, 1930 Columbia Rd. N. W., to Heiman Constr. Co., 2730 Wisconsin Ave. N. W., **$830,000.** Awarded 9/29. G. T. Santmyers, 2209 L St. N. W., archt.

●**D. C., Wash.** — APARTMENT — Morris & Frances R. Gerwicz, Investment Bldg., one 5 story, brick, concrete 290 unit apartment, 2801 Quebec St. N. W., second bldg. of Quebec House Apartments, to Alax Constr. Co., 1025 Vermont Ave. N. W., **$1,000,000.** Awarded 9/30. Weihe & Gibbs, 927 Fifteenth St. N. W., archts.

D. C., Wash.—APARTMENT—Potomac Park Apartments, Inc., 1614 K St. N.W., 8-story, concrete, brick apartment, incl. 144 units, 510 21 St. N.W., to Rosenberg Development Co., 1614 K St. N.W. **$550,000.** Awarded 9/22. Berla & Abel, 1636 Connecticut Ave. N.W., archts.

Ill., Chicago — APARTMENT — Owner, c/o Loebl, Schlossman & Bennett, archts., 333 N. Michigan St., Zone 11, 14 story, bsmnt., 110x110 ft. steel, concrete, brick apartment, Dorchester and 56 Sts., Zone 37, to Patrick Warren Constr. Co., 85 N. Kedzie St., Zone 22, **$800,000.** Awarded 9/15. CD 9/23.

●**Ill., Chicago** — BUILDING — Young Men's Christian Assn., 190 S. LaSalle St., Zone 3, (1st unit) 5 story, bsmnt., steel, brick, stone Y. M. C. A. bldg., 50 and Indiana Sts., to Algot B. Larson, 3837 W. Lake St., Zone 24, **$1,250,000.** Bids 8/8. Philip D. West, 185 N. Wabash St., Zone 1, archt. CD 7/20.

●**N. Y., Syracuse**—APARTMENTS—Grant Village, c/o contractor, 520 family 2-story colonial style, brick apartments incl. streets, landscaping, playgrounds, etc., on 30-acre site Grant Blvd. and James St., to Sam Minskoff & Sons, 521 Fifth Ave., New York. **$5,000,000.** Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., archts.

●**O., Cleveland**—HOMES—Best Constr. Co., 12512 Sprecher Ave., one hundred fifty, 1½ story, 26x29 ft. homes, separate contracts, **$1,300,000.**

Tex., Dallas—DWELLINGS—O. J. Parrot & Frances R. Lee & Assoc., Lawnvale and Scryene Rd., 100 addnl. dwellings, adjacent Old Parkdale Golf Course, own forces. **$475,000.** CD 10/9/47.

Tex., Houston — DWELLINGS — Braes Heights Development Co., 3800 Bellfontaine St., 54 dwellings, own forces. **$375,000.** CD 9/26.

Tex., Houston — COMMUNITY CENTER — Fairworth Co., Inc., c/o Westview Terrace, community center, 12 store spaces, own forces, **$375,000.** CD 9/16.

Tex., Houston—DWELLINGS—Rottermann Builders, Inc., 5118 Laurel St., 45 dwellings, Owner builds. **$400,000.** CD 9/13.

Tex., Pampa — OFFICE — R. D. Hughes, Pampa, 6 story office and penthouse, to Monarch Lumber & Plumbing Co., Pampa, Approx. **$386,000.** CD 9/29

Tex., Pasadena — SHOPPING CENTER — L. F. Corrigan Interests, Mercantile Bank Bldg., Dallas, shopping center, 9200 Block Humble Rd., to Curlee Constr. Co., Pasadena, **$325,000.** CD 9/26.

Tex., Pasadena — DUPLEXES — Charles R. Olds & Assoc., 3425 University St., Houston, 100 duplexes, to Nelson-Gersteman Lumber Co. & Assoc., 6500 Harrisburg St., Houston, Approx. **$450,000.** CD 4/8.

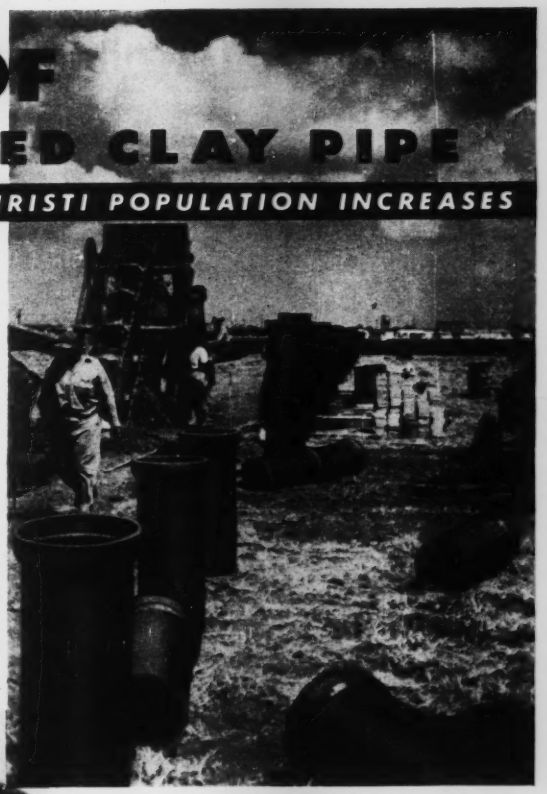
Tex., Port Lavaca—DWELLINGS—Calhoun Development Co., Port Lavaca, 62 dwellings, near Hy. 35. Owner builds. Approx. **$372,000.** CD 9/26.

Tex., Wichita Falls — RESIDENCES—J. A. Simmons, 2906 Grant Ave., 34 residences, own forces. Approx. **$265,000.** CD 9/23.

Continued on page 121

37 MILES OF VITRIFIED CLAY PIPE

HANDLES CORPUS CHRISTI POPULATION INCREASES



BELOW SEA LEVEL INSTALLATION

The project, designed and supervised by city engineers under the direction of H. H. Stirman, Public Works Director, and R. L. Otto, Head of the Engineering and Construction Division, drains and sewers Corpus Christi's Lindale Park development of 1200 new homes. It calls for 194,688 feet of Vitrified Clay Pipe ranging in size from 8 to 24 inches in diameter. Vitrified Clay Pipe was specified to resist corrosion from perpetually saturated and strongly electrolytic soil.

NO FOREIGN MATERIAL IN VITRIFIED CLAY PIPE

Vitrified Clay Pipe is not a compound or mixture of materials bonded by chemical agents. It is pure, natural clay fused at high temperatures by an exclusive process called *Vitrification*. Clay Pipe is a permanent, *heat-bonded* material that serves indefinitely without wearing out. Vitrification is the reason why Clay Pipe is acid-proof, rust-proof and cannot crumble or deteriorate.

If You Need Specific Information On A Clay Pipe Question, Write The Details To The Office Nearest You.

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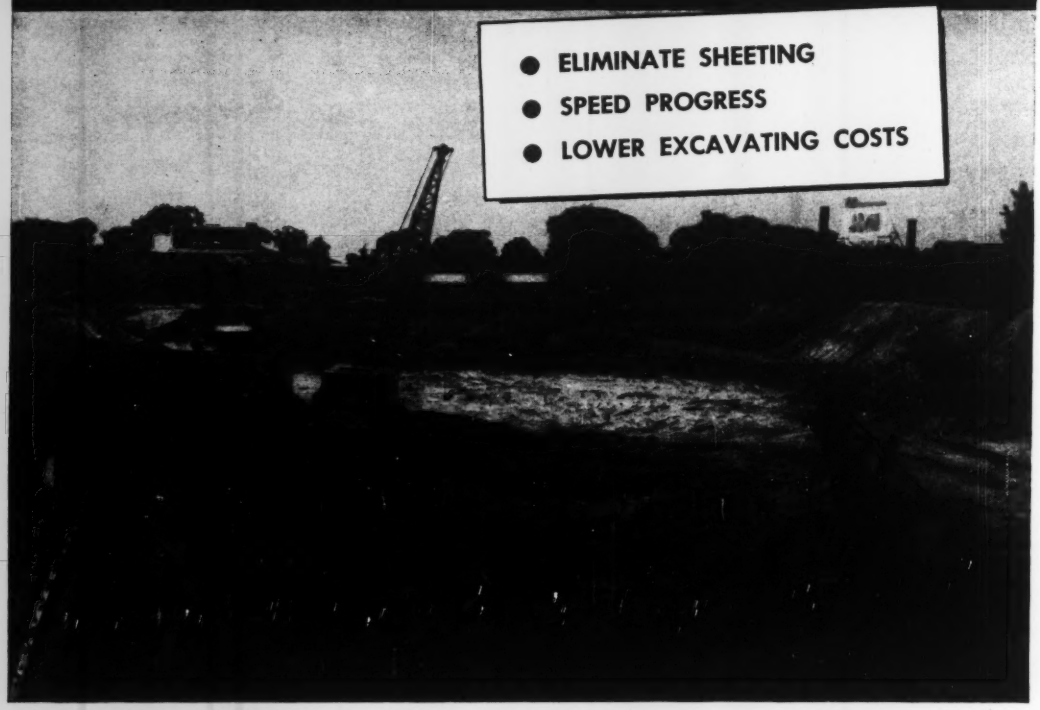
MORETRENCH WELLPOINTS ON BUILDING FOUNDATION



Ley Construction Co., Springfield, Mass., excavates "in the dry" for Sears, Roebuck and Co. Store in West Springfield.

Ten feet of water in fine sand might have made this a costly foundation —

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A MORETRENCH WELLPOINT SYSTEM can make a tremendous difference in the progress and profit of wet work.

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Continued from page 118

Utah, Provo—HOSPITAL—Utah Valley Hospital, Provo, general contract hospital alterations, addns., to Talboe & Harlin, Provo, **$416,520.** Bids 7/11. James G. Rogers, 219 E. 44 St., New York, N. Y., archt.

●**Va., Arlington**—COMMERCIAL CENTER—Horne Properties, Inc., M. Seth Horne, pres., Arlington, 125,000 sq. ft. commercial center, incl. stores and offices, also 475 cars parking area, Lee Blvd. and Patrick Henry Dr., ½ mi. east of Seven Corners, to Standard Constr. Co., 1010 Vermont Ave. N.W., Wash., D. C. **$2,000,000.** Awarded 9/23. Corning & Moore, 1726 M St. N.W., Wash., D. C., archts.

Que., Montreal—SCHOOL—Roman Catholic School Comn., 117 W. St. Catherine St., 2 story, bsmnt., 65x156 ft. rein.-con., brick school for Parish of St. Gertrude, to D. Boileau Ltd., 705 Beaumont St., **$275,000.** J. Sawyer, 1207 Guy St., archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

October 19

S. C., Clinton—STORAGE, etc.—Thornwell Orphanage, Clinton, refrigerated storage and canning plant. The McPherson Co., Greenville, archt.

October 20

Mo., Palmyra—PLANT—Northeast Missouri Electric Power Co-operative, Sect. 7A, incl. fdn. piling, South River Steam Plant, Stanley Eng. Co., Hershey Bldg., Muscatine, engr. CD 12/13, under Unclassified.

Bids Asked

●**Ind., Fort Wayne** — WAREHOUSE, etc.—S. S. Kresge Co., 2727 2 Ave., Detroit, Mich., 1 story, 532x587 ft., brick, rein.-con., steel warehouse, 2 story, 50x150 ft., brick, rein.-con. steel office, Ferguson Rd. and Nickel Plate Ry. **$1,500,000-$2,000,000.** J. E. Sexton, c/o owner, archt. CD 9/29.

Tex., Laredo—WAREHOUSE—Texas-Mexican Ry Co., Laredo, addnl. corrugated iron, concrete warehouse. $70,000.

Tex., Vernon—SERVICE and SHOP—Dabney & Harvey Chevrolet Co., Vernon, auto service, shop, sales. $75,000. Wilson & Patterson, Majestic Bldg., Fort Worth, archts.

SOON LETS CONTRACT

Md., Baltimore — WAREHOUSE, etc., — Owner, c/o J. E. Moxley, archt., 1722 Ellamount St., soon lets contract 2 story, 160x180 ft., structural steel, brick and cinder block warehouse and office, $200,000. CD 12/15/48.

Tex., Austin — SALES and SHOPS—Jack Stableford Pontiac Co., c/o Niggli & Gustafson, archts., 4303 Ave. F, soon lets contract structural steel, brick, tile auto sales and shops. $75,000.

Tex., Temple—FACTORY—American Desk Mfg. Co., c/o A. P. Brashear, pres., Kyle Hotel, soon lets contract 1 and 2 story 100x800 ft. galvanized walls, factory, concrete floors on fill. Approx. $100,000. Plans deposit $15. Wyatt C. Hedrick, 1005 First Natl. Bank Bldg., Fort Worth, archt

Wis., Milwaukee—PLANT—Luick Dairy Co., 1132 N. 6 St., Zone 3, soon lets contract 1 and 2 story, 160x292 ft., steel, brick, ice cream plant, concrete fdn. and floors. L. Peterson & Assocs., 312 E. Wisconsin Ave., Zone 2, engrs. CD 9/16.

Wis., Milwaukee—MERCANTILE—Standard Electric Supply Co., 1045 N. ' St., Zone 3, soon lets contract 2 story, bsmnt., 63x145 ft., steel, brick, block mercantile bldg., concrete floors and fdn. Wm. G. Herbst & Assocs., 1249 N Franklin St., Zone 2, archts.

LOW BIDDERS

N. C., Raleigh—SALESROOM, etc.—Pittsburgh Plate Glass Co., Raleigh, rejected bids Sept. 7, salesroom and warehouse, L. B. **$85,528.** CD 9/14, under LB.

Tex., San Antonio—LAUNDRY—Martin Line Supply Co., 421 Roosevelt St., masonry laundry plant and storage, concrete slab fdn., from J. C. Worcester, 603 American Hospital & Life Insurance Bldg. **$79,826** Est. $75,000. CD 9/20.

Wash., Yakima — BUS DEPOT — Northwest Greyhounds Lines, Yakima, Sept. 26, general contract 62x116 ft., brick bus depot, from G. H. Moen Yakima, **$71,785.** CD 9/21.

CONTRACTS AWARDED

Calif., Belvedere — WAREHOUSE—Certified Grocers, 2601 S. Eastern Ave., 52,000 sq. ft. warehouse, to Wm. P. Neil, 2922 Sunol Dr., Los Angeles, **$140,000.** Harry T. Miller, 1706 48 St., Los Angeles, archt.

Ill., Chicago — PLANT — Columbia Malting Co., 141 W. Jackson St., Zone 4, malting plant, addn., 105 St. and Indianapolis Blvd., separate contracts, **$90,000.** S. E. Birkenbilt, 82 W. Washington St., Zone 2, archt

Ill., Chicago — FACTORY — Felt & Tarrant Mfg. Co., 1735 N. Paulina St., Zone 22, 5 story, 40x60 ft. and 1 story, 25x194 ft. steel, brick factory addns., to Bulley & Andrews, 2040 W. Harrison St., Zone 12, **$350,000.** Friedman, Alschuler & Sincere, 223 W. Jackson St., Zone 6, archts.

Ill., Chicago—BUILDINGS—Hansell-Elcock Co., 3205 S. California St., Zone 23, 3 concrete, steel bldgs., foundry premises, to Jno Griffiths & Son Constr. Co., 228 N. LaSalle St., Zone 1, **$175,000.** Awarded 9/16, Alfred Benesch & Assocs., 30 E. Adams St., Zone 3, archts.

Ill., Chicago—FACTORY—Tenak Products, 610 S. Federal St., Zone 5, 1 story, 125x200 ft. steel, concrete brick factory, 2615 N. Paulina St., Chicago, Zone 14, to Northern Builders, 4002 W. Addison St., Zone 41, **$125,000.** Walter Krober, Arlington Heights, archt.

Ind., Angola—GARAGE, etc.—Northern Indiana Public Service Co., Colfax St., South Bend, Merle Tucker, dist. supt., Angola, 1 story, brick, rein.-con. steel operational garage and shops bldg., to H. H. Verkler, 1611 N. College St., South Bend, **$200,912.** Awarded 9/28.

Ind., Fort Wayne—PRINTING PLANT—Wm. A. Didier & Sons Printing Co., Superior and Calhoun Sts., general contract 1 story, 90x240 ft., brick, steel, concrete printing plant, 613-641 High St., to Max Irmscher & Sons, 1113 Ft. Wayne Bank, Ft. Wayne*** plumbing and heating, to Hipskind Plumbing & Heating Co., 1725 Winter St., Ft. Wayne*** electric wiring, to Henry Electric Co., Ft. Wayne. CD 3/2/48.

Mich., Detroit—BUILDING—Detroit Edison Co., 2000 Second Blvd., 1 story, 176x354 ft., steel, brick, block, concrete bldg., to Darin & Armstrong, Inc., 2041 Fenkell St., **$593,000.** Smith, Hinchman & Grylls, 800 Marquette Bldg., archts.

●**Mich., Lansing** — BUILDING — Oldsmobile Div., General Motors Corp., 1014 Towsend St., altering Bldg. 32, Olds Ave., to Darin & Armstrong, Inc., 2041 Fenkel St., Detroit, **$1,125,000.**

Miss., Holly Springs—PLANT—Holly Springs Brick & Tile Co., c/o K. K. Knight, brick plant. Owner builds. Approx. **$200,000.**

Mo., St. Louis — FACTORY — International Shoe Co., 1501 Washington Ave., Zone 3, 2 story, 80x80 ft., brick, rein.-con., concrete block factory, 3526 Lemp Ave., separate contracts, **$68,000.** John Schroeter, c/o International Shoe Co. Branch, 1820 Cherokee St., Zone 18, archt.

Mo., St. Louis—SERVICE GARAGE—Ost-Swetnam, Inc., 3500 S. Kingshighway, Zone 9, 1 story, 300 ft., and 30x100 ft. brick auto service bldgs., 4840 Olatha Ave., to Elam Contg Co., 6421 Hampton Ave., Zone 9.

Neb., Bladen—GRAIN ELEVATOR—Bladen Grain Co., Bladen, grain elevator, to G. E. Morrison Co., 4544 Charles St., Omaha, **$75,000.**

O., Cleveland — WAREHOUSE — Burnham Stoepel & Co., 421 Beaubein St., Detroit, Mich., design and construction 1 story, 30,000 sq. ft. brick, cement, steel warehouse, railroad spur for 3 freight cars, on 1½ acres, to Norton Constr. Co., 1150 E. 26 St. **$175,000.** Awarded 9/26.

O., Fremont—FACTORY—S. E. Hyman Co., Fremont, 1 story factory addn. mfg. auto seat covers and 2 story office section, 40,000 sq. ft. floor space, to Scheele-Wolfe Constr. Co., Fremont. Approx. **$200,000.** Werner, Taylor & Sanzenbacher & Morris, Nicholas Bldg., Toledo, archts

Okla., Tonkawa — GRAIN ELEVATOR — Farmers Co-operative Assn., Tonkawa, 350,000 bu grain elevator, to A. F. Roberts Constr. Co., Sabetha, Kan., **$125,100.** Est $150,000. Awarded 9/27. Horner & Wyatt, Dwight Bldg., Kansas City, Mo., engrs.

Ore., Portland — AUTOMOTIVE REPAIR SHOW—George B. Wallace, 1509 W. Burnside St., automotive repair show at N. E. Sandy and Imperial Sts., to Johnson-Sterner Corp., 3536 S. E. 76 St., **$75,240.** Awarded 9/30. Annand & Kennedy, Central Bldg., archts.

S. C., Columbia—DAIRY PLANT—Wilson Owens, Ice Cream Co., c/o contractor, dairy plant, to R. C. Fulmer, 1433 Berkeley Rd., Approx **$75,000.**

●**Tex., Andrews** — GASOLINE PLANT — Pure Oil Co. & Assoc., City Natl. Bank Bldg., Houston, gasoline plant in Dollar Hide Field, to Hudson Eng. Co., 2711 Danville St., Houston, Approx. **$6,000,000.**

Tex., Brownsville — PLANT — Brownsville Fisheries, Inc., Brownsville, shrimp heading plant, own forces. **$78,000.**

Tex., Crystal City—PLANT—P. W. Fletcher & Sons, Sebastian, cotton gin plant, Purchase and Hire. Approx **$90,000.**

Tex., Cuero—BOTTLING PLANT, etc.—Coca Cola Bottling Co., Cuero, bottling plant and warehouse, to J. C. Williams, Cuero, **$71,000.** CD 5/25.

Tex., Dallas—WAREHOUSE—H. P. Cannon Wholesale Fireworks Co., 7558 Greenville St., warehouse, to Williams & Wagner Constr. Co., 8515 Preston Rd., Approx. **$70,000.** John Ebert, 206 N. Tatum St., archt.

Tex., Dallas — WAREHOUSE — Owner, c/o John Ebert, archt., 206 N. Tatum St., masonry warehouse, 1515 Dragon St., to Williams & Wagner Constr. Co., 8515 Preston Rd., Approx. **$75,000.**

Tex., Dallas — WAREHOUSE — Trammel Crow, 123 Cole St., warehouse, to McFadden & Miller Constr. Co., 2900 Taylor St., Approx. **$100,000.** CD 9/30.

Tex., El Campo—GRAVEL PLANT—Frnka Bros., El Campo, gravel plant, own forces Approx. **$75,000.**

Tex., Freeport — PLANT—Dow Chemical Co., Freeport, rehabilitation magnesium plant, to Tellepsen Constr. Co., 1710 Telephone Rd., Houston. Approx. **$215,000.** CD 2/3/47.

Tex., Houston — PLANT—D'Arcy Confectionery & Candy Factory, 1926 W. Gray St., candy mfg. plant and service bldg., to R. E. Sullivan Co., 821 First Natl. Bank Bldg., Approx. **$71,000.** Charles Chase, 1309 Anita St., archt.

Tex., Liberty—WAREHOUSE—Le Roy Edmonds, Liberty, warehouse. Owner builds. Approx. **$75,000.**

Tex., Liberty—WAREHOUSE—Meigs Jenkins, Liberty, warehouse. Owner builds. Approx. **$75,000.**

Tex., Magnolia—LUMBER MILL—Grogan-Cochran Lumber Co., Magnolia, reconstructing lumber mill, own forces. **$150,000.** CD 8/19.

Tex., Nordheim—COMPRESSOR PLANT—Continental Oil Co., Ponca City, Okla., design and construction Unit 1, compressor plant, to Process Engineers, Inc., 5635 Daniels St., **$270,000.** CD 8/3.

Va., Chase City—HEADQUARTERS—Mecklenburg Electric Co-operative, Chase City, headquarters bldg., to J. E. Burton, South Boston, **$87,244.** McWhorter, Robinson & Moody, Witz Bldg., Staunton, archts. CD 5/26, under Unclassified.

Wash., Seattle — SHOP — Pacific Car & Foundry Co., 220 Hudson St., 84x415 ft., structural steel fabricating shop, day labor, **$120,000.** A. F. Eiken, c/o owner, engr.

Wash., Seattle—WAREHOUSE—Seattle Iron & Metals Corp., 2346 26 Ave., S.W., 1 and part 2 story, 100x155 ft., rein.-con., masonry warehouse, to Mowat Bros. Constr. Co., 2833 Eastlake Ave., Seattle, **$102,000.** W. J. Jones, Medical Arts Bldg., archt.

Wash., Spokane—WAREHOUSE—S. A. Postell, Cedar and Ide Sts., 3 story, rein.-con. produce warehouse addn., to Hallin, Spilker & Sons, N 2932 Chestline St., Approx. **$400,000.** George Ritter, Hyde Bldg., archt.

Wis., Neenah—GARAGE—Neenah-Menasha Motor Co., 817 S. Commercial St., 1 story, 60x160 ft., steel, brick, concrete block garage, concrete fdn. and floor, to Gansky Co., 409 Garfield Ave., Menasha, R. M. Connelly, 126 W. Washington St., Appleton, engr.

Ont., Hamilton—WAREHOUSE, etc.—T. Eaton Co., Ltd., 190 Younge St., Toronto, 2 story, 60x161 ft., steel, brick, concrete warehouse and office, Rebecca St. between James and Hughson Sts., to W. C. Breman Contg. Co., Ltd., 400 Gage Ave. N., Approx. **$170,000.** Bids 8/29. CD 8/19.

Ont., Little Current—WAREHOUSE, etc.—Brewers Warehousing Co., Ltd., 19 Richmond St. W., Toronto, 1 story, 70x82 ft. brick, concrete block, warehouse and retail store, to Hill-Clark-Francis, Ltd., Whitewood Ave., New Liskeard, Approx. **$75,000.** M. M. Dillon, Bank of Toronto Bldg., Lorden, engr.

Ont., Oshawa — TRANSMITTER—Canadian Commercial Corp., 70 Lyon St., Ottawa, transmitter bldg., to W. B. Sullivan Constr. Ltd., 30 Bloor St. W., Toronto, Approx. **$98,395.**

Que., Hull — FOUNDRY — Conner Washing Machine Ltd., 4026 St. Catherine St. W., Montreal, 110x600 ft., rein.-con. foundry alterations and addns., to provide plant, to Louis Donolo, Inc., 85 Jean Talon St. W., Montreal, Approx. **$300,000.** CD 7/17/46.

Que., Quebec City—PLANT, etc.—International Harvester Co. of Canada, Ltd., 371 St. Paul St., 1½ story, 200x200 ft., brick, terra cotta walls, steel, rein.-con. plant, showrooms, and offices, foot of Bell's Hill near Charest Blvd., to Richard and B. A. Ryan, Ltd., 1705 William St., Montreal, Approx. **$300,000.** CD 10/2/48.

UNCLASSIFIED

BIDS ASKED

October 18

✝**Colorado**—TRANSMISSION LINE—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Yuma-Wray 69-kilovolt transmission line, Colorado-Big Thompson Proj., Spec. 2786. L. N. McClellan, ch. engr.

Minnesota—RURAL DISTRIBUTION LINES—Rural Co-operative Power Assn., Elk River, constructing about 6.25 mi. rural distr. line and rehabilitating about 73.2 mi. rural distr. lines, Minn., 70 Hennepin. Approx. $50,000. Plans deposit $25. United Eng. Service, 600 Kasota Bldg., Minneapolis, engr.

October 19

Kan., Lyons — SWIMMING POOL — City, at office F. Janssen, city clk., City Hall, swimming pool. Plans deposit $15. Wilson & Co., 225 E. Santa Fe St., Salina engrs.

✝**Nebraska** — POWER LINES — U. S. Eng., 1709 Jackson St., Omaha, power lines to pumping stations for Omaha Flood Protection Project, Inv. 69 CD 9/27

B. C., Spring Island (near Kyuquot)—WHARF, etc.—J. M. Somerville, secy., c/o Dpt. P. W., Hunter Bldg., Ottawa, Ont., wharf and marine ways. Approx. $55,000. R. Blais, c/o owner, engr.

About October 20

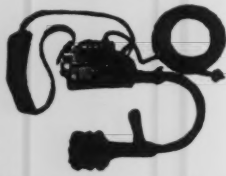
Tenn., Paris — DOCK FACILITIES — State Dpt. Conservation Nashville, dock facilities for small boats on Kentucky Lake. $200,000.

Neb., Fremont — POWER WIRING, etc. — City, R. P. Wks., Will St. Rowe, Chm., Office Dpt. Utilities, Fremont, Item I, power wiring, $99,788; Item II, breeching and duct work, $8,500. Lutz & May, 819 Finance Bldg., Kansas City 6, Mo., engrs.

Tennessee—RURAL DISTRIBUTION LINES — Cumberland Electric Membership Corp., Clarksville, 210 mi. rural distr. lines, Stewart, Montgomery, Cheatham and Dickson Counties.

"BERG"

CONCRETE SURFACER MODEL A



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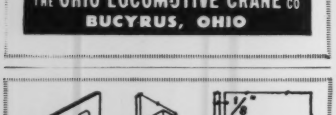

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Saxe Units place in position and securely hold together structural parts to be welded.

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Buffalo-7, New York

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G. D. PETERS CO. Montreal-2, Canada

Plans deposit $25. Wm. M. Wilson, East Side Public Square, Shelbyville, engr. CD 8/12/48.

October 20

†Colorado—TRANSMISSION LINES—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Bursh-Limon 115-kilovolt -three-phase, wood-pole H-frame-type transmission line, approx. 70 mi. long, with 2 overhead ground wires, Colorado-Big Thompson Proj., Spec. 2792. Michael W. Straus, comr.

October 21

New York — VENTILATING EQUIPMENT — Bd. Transportation, 250 Hudson St., New York, Zone 13, installing, furnishing, ventilating equip. for Line D-Hillside Ave. Exten., from 178 St. to 174 Pl., Queens Boro. CD 8/31/45.

October 25

†Arizona — TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., outdoor distr. transformers, outdoor current transformers, outdoor potential transformers, outdoor disconnecting switches to Mesa substation, Davis Dam Proj., Spec. 2784, L. N. McClellan, ch. engr.

†Wyoming—STORAGE TANKS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars at shipping point or f.o.b. cars at Emery, Wyo. and Bonneville, Wyo., two oil storage tanks and two horizontal 1,000 gal. governor oil storage tanks for Boysen Power Plant, Boysen Unit, Boysen Div., Missouri River Basin Proj., Spec. 2798. L. N. McClellan, ch. engr.

October 26

†Ore., Astoria—STEEL BRACKETS—Officer in Charge of Construction, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash., fabrication, installing steel brackets serving as guides for drydock operation at Tongue Point Naval Station, Spec. 20976, for Bureau Yards & Docks Annex, Navy Dpt., Arlington, Va.

October 27

California—TRAFFIC SIGNAL SYSTEMS—State Div. Hys., 120 S. Spring St., Los Angeles, traffic signal systems and intersection lighting at intersections 70 St. with El Cajon Blvd. and Market St. with 1, 8 and 25 Sts. G. T. McCoy, P. Wks. Bldg., Sacramento, state hy. engr.

Calif., Hollister — GRANDSTAND — San Benito Co., Courthouse, 2,800 seating concrete grandstand at County Fairgrounds. Approx. $50,000. Plans deposit $25. Raymond R. Franceschi, Chamber of Commerce Bldg., Sacramento, archt.

Bids Asked

Texas—RURAL DISTRIBUTION LINES—Kimble Electric Co-operative, Junction, 174 mi. rural distr. lines, Edwards Co. $144,000. Plans deposit $25. J. H. Flood & Co., 2906 Franklin St., Waco, engrs. CD 10/13/48.

SOON LETS CONTRACT

Kansas—RURAL DISTRIBUTION LINES—Sumner-Cowley Electric Co-operative, Wellington, soon lets contract 254.72 mi. rural distr. lines, conversion 20.5 mi. lines, Sumner and Crowley Counties. $275,000. Frank Horton & Co., Lamar, Mo., engr. CD 9/30.

La., New Orleans—TERMINAL FACILITIES—New Orleans Passenger Terminal Comn., 501 S. Saratoga St., soon lets contract temporary platforms, canopies, paving, steam, air, gas, water, drainage and electrical facilities at Union Passenger Terminal Station, C. J. Wallace, 501 S. Saratoga St., engr.

O., Cleveland—ASH TANKS—City, City Hall, Lakeside and 6 Sts., Sept. 23, 2 one story, 40x80 ft. steel ash tanks, East Side Addn., from Shirmer-Peterson Co., 6830 Beaver Ave., **$271,716.** Est. $250,000. Frank Schwemler, Auditorium Garage Bldg., city engr. Burns & McDonnell, 107 W. Linwood St., Kansas City, Mo., consult. engrs.

Wisconsin — GAS PIPELINE — Michigan-Wisconsin Pipe Line Co., 704 Michigan Bldg., Detroit, Mich., soon lets contract laying approx. 184 mi. 4- to 14-in. natural gas pipeline from Waukesha to Green Bay. Ford, Bacon & Davis, 1330 Grand Ave., Kansas City, 6, Mo., engrs.

LOW BIDDERS

†California — SWITCHYARD — Bureau Reclamation, Dpt. Interior, Tracy, Sept. 29, Tracy Switchyard about 9 mi. northwest of Tracy, Central Valley Proj., Spec. 2768, from Stolte, Inc., & Duncanson-Harrelson Co., 8451 San Leandro St., Oakland, and United Concrete Pipe Corp., and Ralph A. Bell, Box 425, Baldwin Park, **$978,720.** CD 8/24.

Kansas — RURAL DISTRIBUTION LINES — Pioneer Co-operative Assn., Inc., W. C. Rhoades, mgr., Ulysses, Sept. 27, 272.06 mi. rural distr. lines, Grant, Kearney, Haskell, Gray, Morton and Stearns Co., from A. F. Reis, 702-4 National Bank of Topeka Bldg., Topeka, **$262,853.** Est. $300,000. CD 9/20.

New York — STATION FINISH — Bd. Transportation, 250 Hudson St., New York, Zone 13, Sept. 23, station finish for 179 St. Station, Queens Co., Propositions A and C, from Atlas Tile & Marble Wks., Inc., 238 E. 26 St., New York, Zone 10, **$578,175** and **$697,221** respectively; Proposition B, from Warshaw Constr. Corp., 101 Park Ave., New York, Zone 17, **$541,279.** CD 9/14.

North Dakota — RURAL DISTRIBUTION LINES — McKenzie Electric Co-operative, Watford City, Sept. 23, 332.1 mi. rural distr. lines, 12.5 mi. transmission lines and 10.5 mi. underbuilt lines, McKenzie Co. from Line Builders, Inc., Billings, Mont., **$389,709.** CD 9/21.

North Dakota — RURAL DISTRIBUTION LINES — West Plains Electric Co-operative, Dickinson, Sept. 20, 543 mi. rural distr. lines, Billings, Dunn and Stark Counties, from W. L. Coston & Sons, 1st Natl. Bldg., Birmingham, Ala., **$489,869.** CD 9/7.

O., Cleveland — RECREATION CENTER — City, City Hall, E 6 and Lakeside Sts., recreation center, St. Clair Ave., incl. new entrances, general rehabilitation, from R. Hansen Co., 646 N. Moreland Blvd., **$156,666.** Est. $150,000. J. A. Gattozi, c/o owner, archt. CD 1/14/47.

O., Perrysburg—SWIMMING POOL—Village Council, Sept. 28, swimming pool, from Stanford E. Thal, Inc., 145 Maumee St., Toledo, **$143,132.** Est. $125,000. CD 5/16.

Oregon — RURAL DISTRIBUTION LINES —Blachly-Lane County Co-operative Electric Assn., Blachly, Sept. 27, 50 mi. rural distr. lines, Lane Co., from Del Monte Electric Co., 8275 San Leandro St., Oakland, Calif., **$102,224.** CD 9/21.

South Dakota — RURAL DISTRIBUTION LINES — F. E. M. Electric Ass'n., Ipswich, Sept. 20, 473.2 mi. rural distr. lines, Edmunds Co., from Swift Electric Co., Wheaton, Minn., **$398,359,** Banister Eng. Co., 1549 University Ave., St. Paul, Minn., engr. CD 7/5.

CONTRACTS AWARDED

Colo., Littleton — GRANDSTAND — Centennial Turf Club, c/o Roy D. Barnes, pres. E. & C. Bldg., Denver, substructure 102x440 ft. grandstand, near here, to Continental Constr. Co., Denver, Natl. Bank Bldg., Denver, **$144,805.** Bids 9/20. CD 9/15.

Illinois — RURAL DISTRIBUTION LINES —Southeastern Illinois Electric Co-operative, A. F. Lentz, mgr., Harrisburg, labor, 28.5 mi. 69 KV rural distr. lines, Proj. Illinois 37 H, Saline, to Continental Co., 54 Beverly Pl., Dayton, 9, O., **$83,880.** Bids 9/23, awarded 9/29. Rural Line Engineers, 440 S. Brentwood Blvd., Clayton, St. Louis, Zone 5, Mo., engrs.

Ia., Waterloo — DRIVE-IN THEATRE — Starlite Drive-In Theatre Co., c/o S. A.Oellerich & Philip Winslow, Waterloo, drive-in theatre, separate contracts. Approx. **$100,000.**

Kansas — RURAL DISTRIBUTION LINES — N. C. K. Electric Co-operative, Inc., S. W. Milligan, mgr., Belleville, labor, 460.91 mi. rural distr. lines, Cloud, Republic and Washington Counties, to Walco Engr. & Constr. Co., 2408 E. 4 Pl., Tulsa, Okla., **$138,794.** Est. $160,00. Bids 9/22. CD 9/14.

Kansas — RURAL DISTRIBUTION LINES — P. R. & W. Electric Co-operative, Wamego, labor only, 181.96 mi. rural distr. lines, 56 mi. conversion lines, Pottawattamie, Geary, Wabaunsee and Jackson Counties, to Sycamore Constr. Co., Vincennes, Ind., **$80,527.** Bids 9/20. CD 9/14.

Md., Baltimore — CONDUIT — City, City Hall, Sept. 21, conduit, Contr. 7, to Ligon & Ligon, Inc., 3310 Ridgewood Ave., **$88,221.** W. Rayner Straus, 320 Municipal Bldg., mech. and elec. engr. CD 9/28, under LB.

Miss., Biloxi—DRIVE-IN THEATER—Douglas I. Smith & Assoc., drive-in theater. Owner builds. **$125,000.**

Missouri — RURAL DISTRIBUTION LINES —Ozark Border Electric Co-operative, P. G. Wingate, pres., Poplar Bluff, 285 mi. rural distr. lines, Butler, Dunklin, New Madrid, Ripley and Stoddard Counties, to Whalles Constr. Co., Jackson, Tenn., **$376,267.** Awarded 9/29/49.

Neb., Fremont — SWIMMING POOL — City, general contract swimming pool, to Boschult Constr. Co., Fremont, **$111,452.** Bids 9/21. CD 8/24, under LB.

O., Hamilton — LIGHT PLANT SYSTEM — City, Contr. 1, municipal electric plant, underground and overhead transmission and control circuits, to Collier Constr. Co., Film Exchange Bldg., Cleveland, **$240,719.** Bids 9/13. CD 8/24.

Oklahoma and Arkansas — GAS TRANSMISSION LINE — Arkansas Oklahoma Gas Co., 23 N. 8 St., Fort Smith, Ark., 14 mi. 12 in. gas transmission line between near Spiro, Okla., to owners main line to Fort Smith, Ark., to A. C. Holders Constr. Co., 2615 E. Admiral Pl., Tulsa, Okla., Approx. **$186,000.**

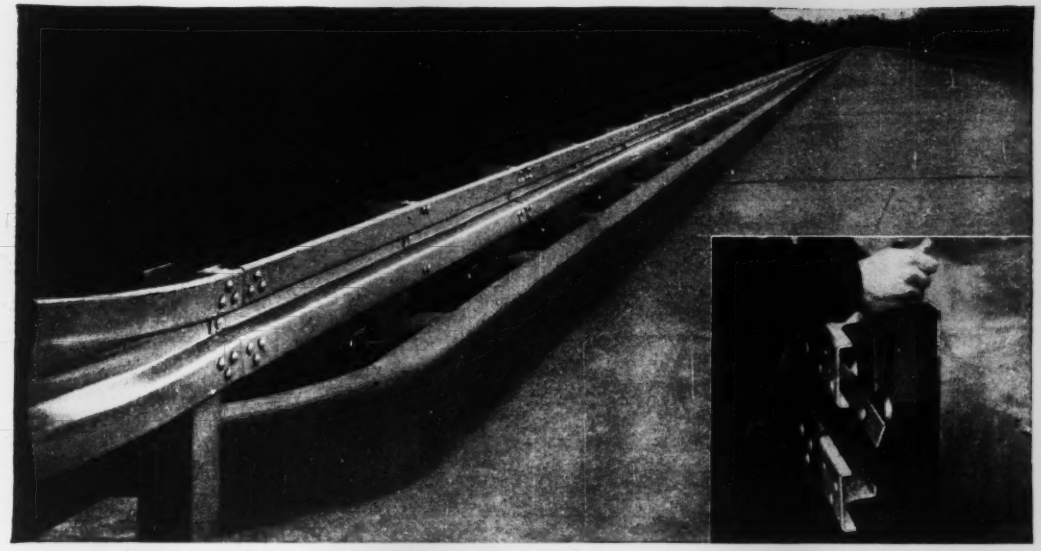
Tennessee—RURAL DISTRIBUTION LINES —Meriwether-Lewis Electric Co-operative, Centerville, 218 mi. rural distr. lines, Hickman, Houston, Humphreys, Lewis, Maury and Perry Counties, to G. T. Key Co., 1212 S. Hull St., Montgomery, Ala., **$224,700.** Bids 9/20. CD 9/9.

Tenn., Nashville — SUB-STATION — Nashville Electric Service, 605 Church St., sub-station Lealand Lane, force account. **$50,000.** CD 12/11/44.

Texas — COMPRESSOR STATION — Michigan-Wisconsin Pipe Line Co., 704 Michigan Bldg., Detroit, Mich., design and construction compressor station, near Perryton, to Ford, Bacon & Davis, Texas City. **$375,000.** CD 11/5/48.

Tex., Beaumont — LIGHTING SYSTEM — Gulf States Utilities Co., 362 Liberty St., 462 unit electric outside lighting sys. extens., Briarcliff, Calder Highlands zone, Lamar Addn., etc., force account. Approx. **$100,000.** CD 9/16.

●Wyoming and Montana—GAS PIPELINE—Montana-Dakota Utilities Co. and Montana-Wyoming Gas Pipe Line Co., 831 2 Ave. S., Minneapolis, Minn., 340 mi. 12/34 in. gas pipeline from Worland Field in Washakie Co., Wyo., to Fallon Co., Mont. Owner builds. Approx. **$7,000,000.**



Safety-Beam installation in bridge-approach span at Altamaha River, near Glenville, Ga. Contractor: H. M. Pafford, Jr., Waycross, Ga.

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Safety-Beam Provides Extra Protection at Danger Points

Nearly 700 ft of Safety-Beam, installed along eastbound and westbound lanes, protects motorists at this bridge over Routes 6 and 46, near Totowa, N. J. Guard Rail Erector: Whitmyer Bros., Folsom, N. J.

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At turns, embankments, bridge approaches and other danger points along highways, you'll often find Bethlehem Safety-Beam Guard Rail on the job, providing extra protection for motorists.

Bethlehem Safety-Beam Guard Rail has what it takes to meet the thrusts of runaway vehicles because it is made up of heavy sections of steel plate, bolted together on steel or wood posts to form a continuous, impact-absorbing beam. When a vehicle strikes Safety-Beam, impact is absorbed by several adjacent posts, making it virtually impossible to break through the rail. In most cases, Safety-Beam redirects vehicles parallel to the rail.

Safety-Beam Guard Rail is easily visible at all times. It is easy to install, even by unskilled labor, for the rail fastens to the post with only one bolt. No end anchor rods, special tools, or complicated adjustments are required.

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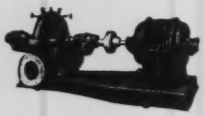

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CONSTRUCTION REPORTS—Third Section

WATER SUPPLY

BIDS ASKED

November 4

Pa., Erie—City, Bureau Water, at office City Clk., 701 French St., Contr. 9, general contract, Chestnut Street Pumping Station. Plans deposit $25. The Chester Engineers, 210 East Park Way, Pittsburgh, Zone 12, engrs.

November 9

●**Calif., Pasadena**—City, 50 m.g. 474x575 ft. rein.-con. water storage reservoir 27 ft. deep at Hastings Ranch, $1,400,000. James M. Montgomery, 117 E. Colorado St., engr. CD 4/8.

LOW BIDDERS

Calif., Ventura—City, Sept 26, water softening plant, pumping stations, from C. J. B. Constr. Co., Box 329, Oxnard **$137,500**, Est. $200,000.

Calif., San Francisco—Public Utilities Comn., City Hall, Sept. 27, 12 in. watermain in Ocean Ave. from Aptos to Victoria and Victoria from Ocean to Holloway Sts., Spec. 519, from Jos. J. Gallagher, 791 San Jose Ave., **$29,242.**

CONTRACTS AWARDED

Calif., Hollister—State Div. Architecture, P. Wks. Bldg., Sacramento, water and sewerage syst., 33rd District Agricultural Assn., to Ferguson Bros., 8923 San Leandro St., Oakland. **$27,933.** Bids 9/13 CD 8/30.

Colo., Craig—City, filter plant extens., to Landreth & Martfeld, Longmont. Approx. **$30,000.** Est. $38,000. Bids 9/20, awarded 9/28 CD 9/12.

Ind., Angola—Bd. P. Wks., City Hall, WW imprvs., incl 250,000 gal. elevated steel tank to Pittsburgh Des Moines Co., 38 S. Dearborn St., Chicago, Ill., **$43,650**; watermain extens., to John Dehner Co., Inc., 1206 Clark St., Fort Wayne, **$31,529.** Awarded 9/26.

Ore., Portland—Valley View Water Dist., 3710 S. W. Scholls Ferry Rd., water sys. imprvs., to P. S. Lord, 4567 S. E. Milwaukie St., **$28,439.** Bids 9/29, awarded 9/29. C. E. Carter, Spalding Bldg., engr.

Tex., McAllen—City, addnl. c.i. waterlines, force account **$40,000.** CD 11/20/47.

SEWERS, WASTE DISPOSAL

BIDS ASKED

October 25

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, 5.34 mi. 8- to 18-in. sanitary sewers in Ivar Ave., C. J. 1226, $131,960. C. E. Arnold, co. engr. CD 9/13.

November 7

Calif., Woodland—City, City Hall, sewage treatment plant, $108,000. Plans deposit $25. Asa G. Proctor, City Hall, city engr., Claire A. Hill, 1419 Butte St., Redding, engr. CD 3/10/47.

LOW BIDDERS

Calif., Redondo Beach—City, Sept. 26, sanitary sewers in Redondo Beach Blvd., from W. C. K. Constr. Co., 629 S. Atlantic Blvd., Los Angeles, **$547,575.** Est. $750,000. CD 9/13.

Colo., Denver—City and Denver Co., City and County Bldg., Sept. 28, district sewers, appurtenances for sanitary drainage in and for district known as East Side Sanitary Sewer Dist. 5, from Winslow & McMillon, 3002 S. Huron St., Englewood, **$138,276.** Est. $188,500. CD 9/21.

Mass., Attleboro—City, P. Wks. Dpt., City Hall, Sept. 26, drain, Brook St., from R. Zoppo Co., 842 Boston-Providence Hy., Norwood, **$57,040.** Thomas Worcester, Inc., 84 State St., Boston, consult. engr.

Tex., Beaumont—Jefferson County Drainage Dist 6, Beaumont, Sept. 30, underground storm sewers along 6 St., 2,000 ft. ditch on 23 St., storm sewer along Caldwood Boundary, sewer laterals in Calder Highlands, from East Texas Constr. Co., Inc., 165 4 St., **$72,760.** Est. $100,000. CD 9/20.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Oct. 4, sanitary sewers, Elmwood area in Oak Cliff from E. E. Farrow, Box 58, **$78,665.** CD 9/21.

CONTRACTS AWARDED

Calif., Los Angeles—City, City Hall, sanitary sewer, storm drain, etc., Franklin Ave. & Monon St., to Charles T. Brown Co., 1955 6 St., San Fernando, **$73,153.** Est. $86,358. Bids 9/7.

Calif., Los Angeles—City, City Hall, 7,000 ft. 8-in. vitr. clay sanitary sewers in Lanark St. and Crebs Ave. Sewer Dist. to Martin Constr. Co., 1529 Olympic Blvd., **$72,123.** Est. $71,731. Awarded 9/26.

Calif., Santa Monica—City, sanitary sewer in Promenade St. from Pico Blvd to Colorado Ave., to Edward Green, 3001 Coolidge Ave., Los Angeles, **$95,010.** Bids 2/13, awarded 9/27. CD 11/15/44

S. D., Eureka—City, storm sewers, to Phelps-Drake Co., 1415 S. E. 8 St., Minneapolis, Minn., **$52,310.** Bids 9/20. Julian Staven, Rapid City, engr.

Tex., Houston—E. A. Parks & Co., 2626 Westheimer St., sanitary and storm sewers, own forces. Approx. **$80,000.**

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

October 18	**October 21**
Massachusetts	**Kansas**
South Carolina	**Kentucky**
Virginia	**Washington**
October 19	**October 26**
New York	**California**
Ohio	**New York**
October 20	**October 27**
Pennsylvania	**California**
October 28	
Alabama	

November 15

†**Kan., Kansas City**—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., Zone 8, installing lifting mechanism for Chicago, Rock Island & Pacific Ry. bridge at mile 2.01 on Kansas River, Serial No. CIVENG 23-023-50-53.

LOW BIDDERS

California—State Div. Hys., Los Angeles, Sept 29, rein.-con. bridge over San Gabriel River on Rosecrans Ave., from John Stroma, 1538 Philadelphia Ave., Pomona, **$214,276.** CD 9/6

●**New York**—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, Oct. 5, 60 ft. span I-beam bridge on Route 19 in village of Gainesville, incl .05 mi. c conc. approaches, etc. Wyoming Co., from Ilero Eng & Constr Corp., McKinley Bldg., Buffalo, **$64,417** est. $77,000, CD 9-15, under Streets and Roads***separation grades between Broadway in city of Kingston and tracks of West Shore R. R., incl. depression of Broadway between Cornell and Dederick Sts. and construct 54 ft. wide, c. c. curbs and sidewalks; construct 95 ft. span plate girder bridge carrying tracks of West Shore R. R. over Broadway, construct 87 ft. plate girder span carrying Railroad Ave. over Broadway, reconstruct and pave Railroad Ave. to merge with Greenkill Ave., etc, Ulster Co., from Lipsett, Inc., 80 Wall St., New York, **$897,926** est. $991,000***painting 14 bridges, Albany, Greene, Saratoga, Rensselaer and Washington Counties, from Gianettasos Bros. Co., 2980 W. Liberty St., Pittsburgh, Pa., **$93,112** est. $116,000. CD 9/12.

CONTRACTS AWARDED

Georgia—State Hy. Dpt., Atlanta, bridge at Kellog Creek and graded approaches on Acworth-Emerson, State Rt. 93, SAIP-1154 (6(3) Cherokee Co., to Carlton Constr., Albany, **$115,249.** CD 9/22.

†**Idaho**—Bureau P. Rds., General Services Admin., 609½ Bannock St., Boise, bridges, culverts, Soda-Springs Hy. in Caribou National Forest, Caribou Co. to T. G. & J. R. Roland, Salt Lake City, Utah. **$60,521.** Bids 9/30. CD 9/22.

●**N. Y., New York**—Triborough Bridge & Tunnel Auth., G. E. Spargo, genl. mgr. and secy., Administration Bldg., Randalls Island, Zone 35, pedestrian bridge over Harlem River connecting E. 103 St. with Wards Island, Manhattan, Contr. WI-1, substructures and approach ramps to Grow Constr. Co., Inc., Pier 41, East River, **$838,000**; Contr. W-2, superstructure, to American Bridge Co., 71 Broadway, **$1,178,584.** Bids 8/12. CD 8/18, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

October 18	**October 21**
Massachusetts	**Kansas**
South Carolina	**Kentucky**
Virginia	**Minnesota**
Wisconsin	**Washington**
October 19	**October 26**
Colorado	**California**
Louisiana	**New York**
Ohio	
October 28	
Alabama	

October 26

Tex., Raymondville—City, graveling, some asph. type streets. $50,000. James V. Curnutte, Transit Tower, San Antonio, engr.

LOW BIDDERS

●**New York**—Dpt. P. Wks., The Governor Alfred E Smith State Office Bldg., Albany, Oct. 5, gravel fdn. course paving 5.5 mi Lake Ontario State Parkway, from Walker-Lake Ontario Rd. easterly to point near Parma-Greece Rd., etc., Monroe Co., from Ilero Eng & Constr Corp., McKinley Bldg., Buffalo, **$787,455**, est. $1,158,000***wid'n, b. conc. resurf. 0.48 mi Route 18 in village of Cattaraugus from point near the Erie R. R. tracks northwesterly to point 500 ft. southeast of the village line, Cattaraugus Co., from Twin Village Constr. Corp., Depew, **$104,629**, est $119,000***e. conc. repaving 0.86 mi. Route 32 from point 0.7 mi. northeast of village of Highland Mills, northeastward to hamlet of Woodbury, etc., Orange Co. from Michael J. Torpey, 50-07 49 St., Long Island City, **$173,669**, est. $203,000. CD 9/15.

O., Toledo—City, Sept. 27, imprv. Airline, Lakeshore and Whiting Aves., Emery, Ralph and Storrs Sts., and Shasta Dr. from C. A. Schoen, Inc., 4033 Fitch St., blacktop **$85,170**, concrete **$85,556** Est. $91,050. CD 9/22.

CONTRACTS AWARDED

Calif., Los Angeles—City, City Hall, imprv. Western Ave., 182 St. to Torrance Blvd., to A. A. Bainter, 1767 Lime Ave., Long Beach, **$95,616.** Est $91,806. Bids 9/21, awarded 9/28. CD 3/10.

●**Georgia**—State Hy. Dpt., Atlanta, grading, paving 5.252 mi. Midville-Miller Rd. beginning at State Rt. 56 in Midvale and ending at Jenkins Co. line F-2648, Burke Co., and grading paving 5.893 mi. Sandersville-Riddleville Rd. beginning at intersection with State Rt. 15 in Sandersville and exten toward Riddleville, S-79 (2) Washington Co., to J. G. Attaway Constr. Co., Statesboro, **$78,224** and **$92,745** respectively***grading, paving and bridge 2.286 mi. Beaverdam Creek in Hartwell-Bowersville, S-0897 (1) Elbert Co., to M. R. Woodall Co., Inc., 1594 Lakewood Ave. S. E., Atlanta, **$77,127**'**grading paving and 2 bridges 5.409 mi. Gibson-Warrenton Rd. beginning at junction with State Rt. 80 in Gibson and ending at Glascock-Warren Co. line, S-0362 (1), Glascock Co., No. 2 to E. H. Hines Constr. Co., Inc., Greenwood, S. C., **$101,871** and No. 2, to W. J. Tidwell Jr., Douglasville, **$80,971**'**grading, paving 2 bridges 14.857 mi. Vada-Pelham Rd., beginning at intersection State Rt. 97 at Vada and ending at intersection State Rt. 93, southwest of Pelham, S-6513 (1), Grady, Mitchell and Decatur Counties, to J. B. Gibson Constr. Co., Donalsonville, **$254,759**'**local material surf. and bridge 1.201 mi. Flat Shoals Creek on Columbus-West Point Rd., State Rt. 103, beginning approx. 0.9 mi. south of Flat Shoals Creek and exten. north toward West Point, S-0632 (1), Harris Co., to S. B. Slack, Decatur, **$111,975**'**grading, paving 9.868 mi. Houston Lake-Jeffersonmee Rd., Rt. 68 from State Rt. 11, approx. 12 mi. south of Macon, toward Houston Lake to beginning of present paving; grading, paving 3.14 mi. Centerville to State Rt. 247 road from Centerville Rt. 668 near Centerville to present paving near Warner Robins grading paving 1.36 mi. Centerville to State Rt. 11 from Rd. from Rt. 668 at Centerville to State Rd. 11, S-0668 (1), S-1147 (1) and 1296 (1), Houston Co., to Hugh Steed Contr. Co., Centre, Ala., **$105,735**'**grading, paving 7.245 mi. Hinesville-Pembroke Rd. beginning at present pavement approx. 6 mi. south of Pembroke and exten. toward Hinesville, S-719 (1), Liberty and Bryan Counties, to Alexander, Inc., 504 Hopkins S.W., Atlanta, **$78,684** '**grading, paving 6.022 mi. Morgan-Dawson Rd., State Rt. 45 beginning at Terrell-Calhoun Co. line and exten. north toward Dawson, S-1188 (2) Terrell Co., to Leo T. Barber, Moultrie, **$115,000**'**grading, paving, reconst. 1 bridge 8.407 mi. Stone Pile Gap-Morgantown Rd., State Rt. 60 beginning approx. 2.2 mi. N. W. of Union-Lumpkin Co. line and ending at Union-Fannin Co. line FH-3-C-2 & FH 3-D, Union Co., to C. M. Lyle Constr. Co., Gainesville, **$228,892**'**grading, paving 9.614 mi. Jordine Still-Alamo Rd., beginning at end of present pavement approx. 2.4 mi. S. E. present pavement approx. 2.4 mi. S E. of Alamo and exten. S. E. to junction of State Rt. 15, S-0580 (1), Wheeler Co., to Holland Constr. Co., Mt. Vernon, **$100,651.** Grand total $1,426,634. Bids 9/30, awarded 10/4. CD 9/22.

Idaho—State of Idaho, Boise, roadbed, grav. surf. 5.343 mi. Albion-Conner Creek Rd., Cassia Co., to Pickett & Nelson, Idaho Falls, **$74,133.** Awarded 9/27. CD 1/22/46.

Ia., West Des Moines—City, City Hall, street paving, surf., to Gillotti Constr. Co., 917 Bell Ave., South Des Moines, **$59,000.**

Kansas—State Hy. Dpt., Iola, grading, base course, 1.306 mi. S P 59-1 K 4030 (1), Allen Co., to R. G. Aldridge, 1610 Nebraska St., Kansas City, Kan., **$62,036.** CD 9/16.

Kan., La Crosse—City, City Hall, slab base course and b. conc street imprvs., to Broce & Smith, Larned, **$74,288.** Bids 9/20. Servis & Van Doren, Hays, engrs.

Kan., Plainville—City, City Hall, street imprvs., to Harry Henery, Inc., Ottawa, **$81,856.** Bids 9/21. Servis & Van Doren, Hays, engr.

Minn., Edina (Minneapolis P. O.)—Village, B Hawthorne, clk., Sept. 12, blacktop surf., Jobs 1-6 inclusive, to Ashworth & Son, St. Louis Park, **$50,244.** P. W. Smith, village engr.

Neb., Alliance—Box Butte Co., Alliance, grade, rural mail route roads, own forces. **$65,000.**

New York—Bureau Contracts & Accounts, Albany, reconstructing 1.47 mi. Route 31 near Montezuma, Cayuga and Senaca Counties, to D. W. Winkelman Co., Inc., Heffernan Bldg., Syracuse, **$649,529.** Bids 8/24. CD 8/29, under LB.

Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, bit. road mix, on waterbound macad. paving and construct Bridge No. FR-745-02, 0.263 mi. S. R. 745, Franklin Co., to Howard Phillips, Inc., 3398 Sullivant Ave., Columbus, **$95,099,** est. $116,350***wid'n, waterbound macad. paving, b. conc. surf. 1.733 mi. U. S. 95, Lorain Co., to The Ohio Eng. Co., 105 Sixth St., Lorain, **$82,841,** est. $96,510*** bit. surf. tr., soil-cement base course 8.959 mi. S. R. 346, Meigs and Vinton Counties, to Highway Maintenance Co., R. F. D. 3, Athens, **$82,707,** est. $89,900***b. conc. resurf. 4.694 mi. U. S. R. 21, Guernsey Co., to Keystone Bituminous Corp., Box 270, Wheeling, W. Va., **$86,025,** est. $84,750. Grand total $346,672. Bids 9/27. CD 9/15.

EARTHWORK, WATERWAYS

BIDS ASKED

November 18

†Arkansas—U. S. Eng., 300 Broadway, Little Rock, installing tainter gates and machinery, White River Watershed, Norfolk Dam, North Fork River, Serial No. CIVENG-03-050-50-25.

LOW BIDDERS

†Oklahoma—Bureau Reclamation, Dpt. Interior, Altus, Sept. 27, dike drain, incl. earthwork and structures, etc. at Lugert, from Stamey Constr. Co., Hutchinson, Kan., **$45,898.** Est. $90,000. CD 9/14.

CONTRACTS AWARDED

●†Arizona and Nevada—Bureau Reclamation, Dpt. Interior, Davis Dam, Nev., installing electrical and hydraulic machinery, appurtenances, erecting steel structures, Davis Dam Power Plant and Switchyard, Davis Dam Proj., Spec. 2733, to Donovan-James Wismer & Heber, 1725 Carroll Ave., St. Paul, Minn., **$1,508,803.** Bids 9/7, awarded 9/22. CD 9/26, under LB.

AIRPORTS AND AIRBASES

LOW BIDDERS

N. Y., Idlewild—TERMINAL BLDG.—Port of New York Auth., 111 8 Ave., New York, Zone 11, Oct. 4, expansion temporary terminal bldg., Contr. No. NYA-106, from Worthmann & Sons, 109 E. 29 St., New York, Zone 16, **$533,251.** CD 4/27/44.

LATIN AMERICA

Brazil, Rio de Janeiro—Secy. General Ministry Pub. Wks., Ave. Nilo Pacanha 12, received no bids September 15 leveling Santo Antonio Hill. Plans being revised. CD 8/10.

PUBLIC BUILDINGS

BIDS ASKED

October 24

Ill., Arlington Heights—SCHOOL—Bd. Educ., Twp. High School Dist. 214, Euclid and Walnut Sts., 2 story, bsmnt., 170x180 ft., brick, stone, rein.-con. high school addn., $300,000. Plans deposit $35. Carl M. Teutch, 1105 W. Lawrence St., Chicago, Zone 40, archt.

October 26

†California—SHOP, etc.—Bureau Reclamation, Dpt. Interior, Phoenix, Ariz., machine shop and sewage disposal sys. for Parker Dam Government Camp, Parker Dam Proj., Spec. R3-PX-26 (Region 7), L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

October 31

†Colorado—TRANSFORMER, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., transformer, circuit breaker, switches, disconnecting fuses, fuse cutout, lightning arresters, current transformers and demand meter for Hoyt Substation, Colorado Big Thompson Proj., Spec. R7-74 (Region 7), L. N. McClellan, ch. engr.

November 1

Tex., Dallas—HIGH SCHOOL—Dallas Bd. Educ., Akard and Royal Sts., 745,494 cu. ft. Forest Avenue Junior High School, $800,000. Bid date changed. Mark Lemmon, 1210½ Main St., Bd. archt. Wyatt C. Hedrick, 904 Fort Worth Ave., engr. and archt. CD 10/6.

January 5

●Minn., St. Paul—HIPPODROME—State Dpt. Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, livestock coliseum (hippodrome) at State Fair Grounds. $1,200,000. K. C. Wright & Assoc., State Fair Grounds, archts. CD 8/10, under LB.

LOW BIDDERS

†Colorado—POWER PLANTS—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., Sept. 23, completing Estes and Marys Lake Power Plants, near Estes Park, Colorado-Big Thompson Proj., Spec. 2767, Schedule 1, from Flora Constr Corp., Denver, **$171,135;** Schedules 2 and 5, from Electrical Constructors, Inc. & Elliott, Chula Vista, Calif., **$71,442** and **$160,941** respectively. CD 8/19.

Ia., Cedar Falls—DORMITORY—State Bd Educ., Des Moines, rejected bids Sept. 14, general contract womens dormitory, Iowa State Teachers College, L. B. **$987,380.** CD 9/27, under LB.

CONTRACTS AWARDED

Calif., Merced — SCHOOLS — Merced Union Elementary School Dist., Merced, 3 schools, incl. Franklin School, Ragsdale Intermediate School and Gleander Acres School, to Larsen-Ratto Constr. Co., 1901 Hedges Ave., Fresno **$551,505.** Bids 9/20. CD 9/27, under LB.

Colo., Pueblo — BOILER PLANT — School Dist. 60, 119 Colorado Ave., general contract 1 story, 2 mezzanines, 60x63 ft., brick, concrete steel boiler plant, to Platt Rogers, Inc., 2440 N. Cascade Ave., Colorado Springs • • • plumbing and heating, to Stephan & Lambert Plumbing & Heating Co., 128 E. 5 St., Pueblo • • • electrical work, to Collier Electric Co., 700 W. 13 Ave., Denver, Approx. **$179,102.** Awarded 9/27.

Ill., Carbondale — SERVICE SHOPS — State Div. Architecture & Engr., Armory, Springfield, July 19, general contract service shops, Southern Illinois University, to Federal Constructors, Inc., 30 N. Dearborn St., Chicago, **$359,200.** Bids 7/19. CD 7/12.

●La., Baton Rouge—HOSPITAL—State Div. Admin., Capitol Annex, Baton Rouge, eight 1 story, concrete, brick bldgs., Southeast Louisiana State Hospital, Hwy. 190, to R. P. Farnsworth & Co., 1515 S. Salcedo St., New Orleans, **$2,528,800.** CD 9/9.

Mo., Hamilton—SCHOOL—Bd. Educ., Hamilton, Penny High School, Owner builds. **$260,000.** J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt.

Neb., Hastings — POWER PIPING — City, power piping for water and light plant improvs., to Winger Constr. Co., Ottumwa, Ia., **$116,383.** Bids 9/15. CD 7/20.

N. Y., Brockport—DORMITORY—New York State Dormitory Auth., 93 State St., Albany, dormitory and facilities bldg. to Swartout & Rowley, 548 Mt. Hope Ave., Rochester, **$674,890.** Kaelber & Waasdorp, 311 Alexander St., Rochester, archts. Bids 7/31, awarded 8/19. CD 7/7.

N. Y., Fredonia—DORMITORY, etc.—New York State Dormitory Auth., 93 State St., Albany, dormitory and facilities bldg. to Friedrich & Son, 710 Lake St., Rochester, **$675,379.** Bids 7/20, awarded 8/19. CD 7/13.

●N. Y., Hollis—SCHOOL—Bd. Educ., 49 Flatbush Ave. Exten., Brooklyn, Zone 1, general contract P. S. 178, Radnor to Avon Rds. north of 189 St., to Caristo Constr. Co., 26 Court St., Brooklyn, Zone 2, **$1,148,000.** Bids 9/6. CD 9/14, under LB.

N. Y., Long Island City—HOUSE FDNS., etc.—New York City Housing Auth., 63 Park Row, New York, Zone 7, foundations, appurtenances for Sect. II of Ravenswood Houses, Proj. NYC-20, incl. reinforcement and bldgs. numbered 18 to 31 inclusive located in area bounded by 34 Ave., 21 St. and 36 Ave. and 12 St., to John Rosenblum, Inc., 282 Stanton St., New York, **$888,000.** Bids 8/23. CD 8/29, under LB.

●N. Y., New York—SCHOOL—Bd. Educ., 49 Flatbush Ave. exten., Brooklyn, Zone 1, P. S. 18, Morris Ave. and E. 149 St., to Psaty & Fuhrman, Inc., 369 Lexington Ave., Zone 17, **$1,321,000.** Bids 8/23. CD 8/31, under LB.

●N. Y., New York—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, general contract Sect. I, Bldgs. 5, 6, 7 and 8 of Melrose Houses, bounded by E. 153 St., Morris Ave., E. 156 St. and irregular line approx. midway between Morris and Courtland Aves., Bronx Boro, to John A. Johnson & Sons, Inc., 268-41 St., Brooklyn, Zone 32, **$2,772,000.** Bids 9/20. CD 9/23, under LB.

N. Y., Queensbury (P.O. Glens Falls) — SCHOOL — Union Free School Dist. 2, Town of Queensbury and Village of Glens Falls, school, to Adirondack Constr. Co., Glens Falls, **$326,339.** Bids 9/21. CD 9/13.

Va., Fredericksburg — BOILER PLANT — State of Virginia, Richmond, boiler plant at Mary Washington College, to Wallerstein, Inc., 1 N. 6 St., Richmond, **$102,200.** Bids 9/13 CD 8/9.

Ont., Guelph—HOUSES—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 50 houses (Guelph Proj. 4/49), to R. F. Booth Constr Co., Ltd., 1986 Drummond Rd., Niagara Falls. Approx **$350,000.** Bids 9/22. CD 9/14.

Que., Black River (Postal Dist. Waltham —HYDRO PLANT—Pembroke Electric Light Co., Ltd., 283 Pembroke St., Sherbrooke, Approx. **$100,000.** Bids 5/27. CD 4/14.

●Que., Montreal North—HOUSING—Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal, 216 unit housing, Proj. 1-49, to Louis B. Magil Co., 5274 Queen Mary Rd., Montreal, Approx. **$1,133,480.** Bids 9/26. CD 9/15.

Que., Quebec City—HOSPITAL—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., foundation and 1st floor slab for Military Hospital at Ste. Foye Area, to Couchon Magloire, Ltd., 311 de la Salle St., Quebec City, Approx. **$193,600.** G F. Caron, 142 St. Joan St., archt. Leblanc & Montpetit, 513 Rachel St. E., Montreal, engrs. CD 12/3.

COMMERCIAL BUILDINGS

SOON LETS CONTRACT

Colo., Denver—CLUB—Denver Athletic Club, 1325 Glenarm Pl., soon lets contract 6 story, 83x125 ft., bsmnt., steel, brick, tile, terra cotta, club incl. remodeling existing bldg., 10 bowling alleys, gymnasium, locker rooms, etc. Approx $250,000. Raymond H Ervin, 616 Patterson Bldg., archt. and engr. CD 6/18/45.

LOW BIDDERS

Calif., Los Angeles—HEALTH CENTER—Los Angeles Tenth Dist. Calif Congress of Parents & Teachers, Inc., 499 California St., Sept. 27, 6 story 32,000 sq. ft. health center, 322 W. 21 St., from Waahle-Camplan Co., 4860 Valley Blvd., **$534,944,** est. $500,000. CD 9/21.

Calif., Ventura—MATERNITY—Foster Memorial Hospital, Loma Vista Rd., Sept. 27, 2 story, 20,000 sq. ft. rein.-con. Goodyear Maternity Bldg., from J. A. McNeil Co., 714 W. Olympic St., Los Angeles, **$301,950,** est. $274,000. CD 9/15.

Fla., Miami—DEPARTMENT STORE—The Roper Corp., c/o low bidder, department store, from Duffey Constr. Co., Inc., 1452 N. Miami Ave., **$278,968.**

Tex., Borger—HOTEL—Board Directors, c/o Cantrell & Co., archts., Pampa, Sept 29, 7 story, bsmnt., brick, concrete, steel frame hotel, from Von Frellick, Inc., P. O. Box 209, San Angelo, **$635,200.** Est. $500,000. CD 9/21.

Tex., Houston — COMMUNITY CENTER—Jewish Community Center, 4701 Caroline St., Sept. 27, Jewish Community Center, from Tellepson Constr. Co., 1710 Telephone Rd., **$337,000.** Est. $350,000 CD 9/13.

CONTRACTS AWARDED

Calif., Ontario — DWELLINGS — Baruch Corp., 5655 Wilshire Blvd., Los Angeles, 45 dwellings, 5 and Campers Sts. Owner builds. **$270,000.**

Calif., San Jose — RESIDENCES—McKeon Constr. Co., 550 Taraval St., San Francisco, 35 residences, Broadleaf Lane, Kenwood and Walnut Grove Ave. Owner builds. **$280,000.**

Calif., San Mateo — CLINIC — San Mateo Clinic, 2 Ave., 2 story, with 1 story wings clinic, to Howard J. White, Inc., 44 Encino Ave., Palo Alto, **$254,443.** Bids 9/27. CD 9/14.

Calif., Santa Monica—OFFICE—Associated Telephone Co., Santa Monica, 40,000 sq. ft. rein.-con. telephone office, and 20,000 sq. ft. parking bsmnt., to George W. Carter Co., 1721 W. Olympic Blvd., Los Angeles, Approx. $600,000. Albert C. Martin, 333 S. Beaudry St., Los Angeles, archt.

D. C., Wash. — DWELLINGS — Carr, Inc., 1010 Vermont Ave., erecting 52 two-story, brick, cinder block dwellings, 4300-4356 and 4301-4345 Gorman Terrace S. E., to B & B Inc., 1010 Vermont Ave. N. W., **$312,000.** Awarded 9/29. M. L. Hagley, 3707 East-West Hy., Chevy Chase, Md., archt.

Fla., Hollywood — HOMES — Galvin-Wohl, 1843 Hollywood Blvd., 32 homes in Sunnyside Estates. Owner builds. Approx. **$250,000.**

Fla., Jacksonville — BUILDING — Young Women's Christian Assn., W. Monroe St., Zone 2, erecting concrete, stone, masonry building for Y.W.C.A., E. Dewal St. near Liberty St., to O. P. Woodcock Co., W. Monroe St., Zone 1. **$374,888.** Bids 8/15, awarded 9/27. Jefferson D. Powell, Atlantic Natl. Bank Bldg., Zone 1, archt. CD 5/16.

Fla., St. Petersburg — HOMES — Azalea Homes, Inc., c/o D. McNabb, Palatka, 30 homes. Owner builds. Approx. **$250,000.**

Ga., Savannah — APARTMENT DEVELOPMENT—Bowen & Sundry Corp., c/o contractor, apartment development, to Jerome Constr. Co., 1108 E. 53 St., Savannah. Approx. **$300,000.**

Ill., Chicago — RESIDENCES — Thomas Buckley Bldg. Corp., 100 N. LaSalle St., Zone 2, 26 residences, 5505 59 St., Odell St., 5514-60 N. Odell St., Zone 31. Owner builds. **$250,000.** C. J. Kastrup, 7346 Madison St., Forest Park, archt.

Ill., Chicago—SCHOOL—St. Francis Xavier Cabrini School, 751 S. Sacramento St., Zone 12, 2 story, bsmnt., 75x150 ft. steel, concrete, stone school, to Harold Peterson, 1439 N. Lotus Ave., Zone 30, **$300,000.** Awarded 9/15. Frank J. Serpico, 4800 N. Milwaukee St., Zone 30, archt.

Ill., Chicago — APARTMENT — Raymond Sher, 505 N. Michigan St., 8 story, brick, rein.-con. stone apartment, to Crane Constr. Co., 505 N. Michigan Ave. Carl J. Kastrup, 7346 Madison Ave., Forest Park, archt. CD 9/23.

Ill., Chicago — HOUSES — Cadillac Constr. Co., 1156 E. 54 Pl., Zone 15, 26 brick houses, $900 Block South Constance Ave., $900 Block Creiger Ave. **$250,000.** Owner builds. Arthur S. Cohen, 1156 E. 54 Pl., Zone 15, archt.

Ill., Chicago — APARTMENT — Owner, c/o John Pruyn, archt., 322 W. Washington St., Zone 6, 5 story, 50 unit, brick, rein.-con. apartment, Surf and Commonwealth Sts., to Mutton Constr. Co., 148 Southwestern St., Zone 8, **$280,000,** awarded 9/23.

Ill., Chicago—CLUB—Svithiod Singing Club, 628 W. Wrightwood St., Zone 14, 3 story, bsmnt., concrete, brick club, to Freevol Smedberg Co., 5807 W. Chicago St., Zone 51, **$275,000.** Awarded 9/26. CD 8/30.

Ill., Highland Park—MEDICAL—Medical Arts Bldg., 17 Sheridan Rd., modification Lodge Bldg. into Medical Bldg., to C. A. Klooster, 11 S. LaSalle St., Chicago, Zone 3, **$250,000.**

Ill., Lansing — SCHOOL — St. Ann Parish, Chicago Ave. and Ridge Rd., 2-story, bsmnt., 60x155 ft., steel, brick, stone school, to Roy C. Clark, Inc., 804 E. Chicago Ave., East Chicago, Ind. Approx. **$250,000.** Awarded 9/14. CD 8/17.

Md., Essex — HOUSING — J. H. Requard Realty Co., 7003 Eastern Ave., Baltimore, one hundred asbestos shingles siding dwellings, concrete block fdn., Martindale Development, separate contracts. **$300,000.** CD 10/17 47.

Minn., St. Paul—HOUSING—Lorraine Apartments, Inc., 108 E. 12 St., general contract two 2 story, bsmnt., 89x100 ft. apartments, Riverside Dr., to Gardinal Co., 108 E. 12 St., **$300,000.**

Mo., Centralia—SCHOOL, etc.—Sunnydale Academy, 3 story school and admin. bldg., day labor, **$250,000.** H. E. Kirkemo, Nat. Fid. Life Bldg., Kansas City, Mo., archt.

Mo., St. Louis—APARTMENTS—Fifty-four Hundred Two, Inc., 861 Chestnut St., Zone 1, plans by Saum Architects, 7131/2 Chestnut St., 3 story, 70x153 ft., 58-unit brick, concrete, apartment, 5402 Cabanna Ave., separate contracts. **$250,000.**

●**Mont., Missoula**—HOSPITAL—St. Patrick's Hospital, 6 story hospital addn. to J. C. Boespflug Constr Co., 1912 Ave. S, Seattle 4, Wash. Approx. **$2,000,000.** H. E. Kirkemo, Missoula, archt.

N. J., Woodlynne—RESIDENTIAL DEVELOPMENT—Woodlynne Constr. Co., Chestnut and Cooper Sts., residential development, Chestnut and Cooper Sts., separate contracts, **$252,000.** Dante D' Anastasio, 1815 Federal St., Camden, archt.

N. M., Albuquerque — THEATRE — Texas Consolidated Theatres, Inc., Majestic Bldg., Dallas, Tex., 1,200 seating capacity, structural steel, masonry theatre, concrete pier and beam fdn., to Lembke Constr. Co., P. O. Box 184, Hobbs, **$261,000.** Jack Corgan, 2008 Jackson St., Dallas, Tex., archt.

O., Mayfield Heights — HOMES — Harmony Homes, 1925 Lee Rd., Cleveland Heights, 32, 1 and 1½ story, 24x38 ft. frame homes, Warton Blvd., Iroquois Ln. and Orchard Heights, separate contracts. **$368,000.**

Tenn., Old Hickory — EXCHANGE — Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., telephone exchange bldg., to Harlan Constr Co., 2915 Gallatin Rd., Nashville. Approx. **$300,000.**

Tex., Dallas — DWELLINGS — Edward T. Dicker, 101 Laurel Land Rd., 100 dwellings, concrete slab fdn., Beckley Heights, Owner builds. Approx. **$375,000.** CD 6/21/48.

INDUSTRIAL BUILDINGS

BIDS ASKED

●**Puerto Rico, Ponce** — REFINERY — Puerto Rican Oil Refining Co., Ponce, Puerto Rico, c/o Parsons, Brinckerhoff, Hall & Macdonald, engrs., 51 Broadway, New York, N. Y., 25,000 bbl. refinery $20,000,000. CD 9/15.

CONTRACTS AWARDED

Calif., Los Angeles — WAREHOUSE — See's Candy Shops, Inc., 5725 W. Jefferson St., 30x62 ft. warehouse addn., to Jackson Bros., 3425 W. 8 St., **$68,000.**

Colo., Boulder—WAREHOUSE, etc.—Public Service Co. of Colorado, Frank S. Henderson, dist. mgr., Boulder, 1 story, 150x170 ft. rein-con. steel, brick warehouse, garage and office, to Hammer Constr. Co., Boulder, **$112,419.** CD 1/27.

●**Ill., Chicago**—FREIGHT HOUSES—Chicago, Burlington & Quincy R. R. Co., H. R. Clark, ch. engr., 547 W. Jackson St., Zone 6, two 1 and 2 story, 50x1000 ft., steel, rein.-con. freight houses, 35x1000 ft. platform, Cermak Rd. and Morgan St. to Sumner S. Sollitt, 307 N. Michigan St., Zone 1, **$1,075,000.** Awarded 9/26. CD 6/22.

Ill., Morton Grove — FACTORY — Norco Molded Prods. Co., 6467 N. Avondale St., Chicago, Zone 30, 1 story, bsmnt., steel, brick, concrete factory, 8020 N. Austin Ave., to E. W. Johansen, 3853 N. Keeler St., Chicago, Zone 41, **$72,000.** Frank L. Glick, 3938 N. Central St., Chicago, Zone 34, archt.

Tex., Houston—PLANT—Cook Paint & Varnish Co., 2119 Main St., masonry plant expans., to O. L. Allen, 1923 Wentworth St. Approx. **$70,000.** John W. Folsom, c/o owner, engr

UNCLASSIFIED

BIDS ASKED

October 19

N. Y., Napanoch—CELL BLOCK, etc.—Dpt. Correction, State Office Bldg., Albany, cell block and heating plant, $432,766. Plans deposit $30. Extended date. Harvey Wiley Corbett, 300 Fourth Ave., New York, archt. CD 9/20.

October 20

†**Wyoming**—TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Cody, transformers, circuit breakers, switches, disconnecting and by-pass switches, disconnecting fuses, fuse cutout hookstick and fuse remover, portable recording voltmeter for Meeteetse substation, Missouri River Basin Proj., Spec. R-6-COD-9. Extended date. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. CD 9/22.

October 26

Pa., Phila. — UTILITIES TUNNEL, etc. — Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract for utilities tunnel, roads, walks and electrical work in connection therewith for Bldgs. S-1, S-2 and Bldg. 7, at Phila. (Byberry) State Hospital. Plans deposit $10. Simons Eng. Co., 2010 Walnut St., engr.

October 27

†**Arizona** — TRANSMITTER RECEIVER SETS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 4 carrier-current relaying transmitter receiver sets, one control and relay board, 2,500 lin. ft. coaxial cable, 2 sets Line-protective and carrier current relays and one 400-kva substation, three 10-kva transformers, for Mesa, Coolidge and Prescott substations, Davis Dam Proj., Spec. 2791. L. N. McClellan, ch. engr.

SOON LETS CONTRACT

Mich., Detroit — GRANDSTAND — Michigan Racing Assn., c/o Giffels & Vallet, Inc., archts., 1000 Marquette Bldg., soon lets contract, concrete, steel, masonry superstructure grandstand, maintenance bldg. and jockeys bldg. $500,000.

Missouri—RURAL DISTRIBUTION LINES—Co-Mo Electric Cooperative, Tipton, soon lets contract, labor only, 405.95 mi. rural distr. lines and conversion 39.5 mi. lines in Cooper, Moniteau, Cole, Benton, Morgan and Camden Counties, $450,009. Frank Horton & Co., Lamar, Mo., engrs.

LOW BIDDERS

Missouri—RURAL DISTRIBUTION LINES—Ozark Electric Co-operative, A. Claypool Dougherty, mgr., Mount Vernon, Sept. 23, 325.32 mi. rural distr. lines, 111.5 mi. conversion lines, Dade, Greene, Jasper, Lawrence, Christian, Barry and Stone Counties, from Reinhardt & Donovan Co., Commercial Exchange Bldg., Oklahoma City, Okla., **$535,130.** CD 9/15.

Wash., Tacoma—TOWER FOUNDATIONS, etc.—City, City Hall, Oct. 3, tower foundations, galvanized steel towers, stringing conductors, overhead ground wire for $1,746,000 LaGrande-Tacoma 115-kv transmission line, from Utility Constr. Co., Puget Sound Bank Bldg., Tacoma, **$236,809.** CD 9/22.

CONTRACTS AWARDED

Calif., Los Angeles — CLUBHOUSE — City, City Hall, 85x105 ft., reinforced brick clubhouse, Ardmore Playground, to Stein Constr. Co., 1542 Venice Blvd., Los Angeles, **$76,160.** Bids 9/15, awarded 9/29. Johnson & Minasian, 233 S. Broadway, engrs.

Calif., Palm Springs—PARK BLDG.—City, clubhouse, E. Ramon Rd., to Orlan Andrews, Box 465 Palm Springs, **$82,000.** Harry J. Williams, The Plaza, archt. CD 5/20.

Fla., Miami — BAND SHELL — City, band shell at Bayfront Park, to Witters Constr. Co., 1454 N. W. 17 Ave., **$72,500.** CD 9/30, under LB.

Fla., Miami Beach — SWIMMING POOL — Rendale Hotel, c/o contractor, swimming pool, to Arkin Constr. Co., Inc., 1827 Purdy Ave., Approx. **$50,000.**

Illinois—RAILROAD—Illinois Central Railroad, C. H. Mottier, vice pres. and ch. engr., 135 E. 11 Pl., Chicago, Zone 5, grading, piping, setting 8.79 mi. railroad line between Bois and Scheller, to serve new mine of Chicago, Wilmington & Franklin Coal Co., Jefferson Co., to Mitchell Contr. Co., 216 E. Madison St., Herrin, Est. **$825,000.** CD 2/23.

Ill., Freeport — DRIVE-IN THEATRE — Freeport Drive-In Theatre Co., c/o Robert Grant, Freeport, drive-in theatre, Hy. 20, east of here, separate contracts, Approx. **$85,000**

Missouri—RAILWAY—Atchison, Topeka & Santa Fe Ry., F. D. Kinnie, ch. engr. (Eastern Lines), 916 Tyler St., Topeka, Kan., line change between Medill and Wyaconda, about 480,000 cu. yd. grading, overhead highway bridge, placing 2 concrete boxes and 3 rows corrugated metal pipe, to Cameron, Joyce & Co., Keokuk, Ia.

Alt., Medicine Hat—GAS WELLS—Municipality, Medicine Hat, drilling municipal gas wells, to Northern Development Co., Edmonton. Est. **$100,000.** CD 6/10.

Proposal Advertisements see pp. 127, 128, 129

SEARCHLIGHT SECTION

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2782) will be received by Bureau of Reclamation, Denver, Colorado, November 10, 1949, and then publicly opened for furnishing power and control switchboards: 750-kva, 4,160-to 400-volt power transformers; carrier-current equipment; battery chargers; and coaxial cable for Boysen Power Plant and Thermopolis substation, Missouri River Basin Project, Wyoming. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (399)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2808) will be received by Bureau of Reclamation, Coulee Dam, Washington, November 8, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of river channel improvements, Grand Coulee Dam, Columbia Basin Project, Washington. The work is situated at Grand Coulee Dam, Washington. Principal items are approximately: 148,000 cu. yds. excavation, common; 181,000 cu. yds. excavation, rock; furnishing and placing 151,000 tons armor rock on riverbank slope; furnishing and placing 615,000 tons riprap rock on riverbank slope; placing 460 cu. yds. concrete; placing 7,000 sq. yds. asphaltic-concrete paving; transporting 400,000 tons material on cross river ferry; and other work. Time allowed for completion will be 560 days. For particulars, address Bureau of Reclamation, Coulee Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (398)

OFFICIAL PROPOSALS

Bids: October 17, 1949 (396)

Furnishing Cast Iron Water Pipe

WASHINGTON SUBURBAN SANITARY COMMISSION

CONTRACT NO. 701-W

Sealed proposals for furnishing and delivering 30,000 feet of 6-inch, 40,000 feet of 8-inch and 10,000 feet of 10-inch cast iron water pipe will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 1:20 P. M. Eastern Standard Time, Monday October 17th, 1949 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

Bids: October 17, 1949 (395)

Furnishing Cast Iron Water Pipe

WASHINGTON SUBURBAN SANITARY COMMISSION

CONTRACT NO. 702-W

Sealed proposals for furnishing and delivering 10,000 feet of 12-inch, 6,000 feet of 16-inch, 2,000 feet of 20-inch and 2,000 feet of 24-inch cast iron water pipe will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 1:30 P. M. Eastern Standard Time, Monday October 17th, 1949 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

(Continued on page 128)

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS

(Continued from page 127)

Bids: October 31, 1949 (400)

Holland Tunnel—Exit Viaduct—Jersey City, N. J.

THE PORT OF NEW YORK AUTHORITY
CONCRETE DECK
AND
APPROACHES
CONTRACT HT-13

Sealed proposals for the construction of the concrete deck and approaches for the Exit Viaduct for the Holland Tunnel in Jersey City, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Monday, October 31, 1949, and thereafter in the Auditorium of the Authority at the same address until 2:30 P. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman

New York, October 13, 1949

Bids: October 24, 1949 (?)

Water Main Construction

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 693-W

Sealed proposals for constructing approximately 10,000 feet of 42-inch Force Main from Rocky Gorge Pumping Station to Wills School Filtration Plant near Laurel, Maryland, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Monday, October 24, 1949 at 1:00 P. M., Eastern Standard Time, at which place and time they will be publicly opened and read. Alternate bids are asked on cast iron, steel reinforced concrete prestressed, and reinforced concrete cylinder pipe.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland, upon deposit of $10.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

Bids: October 27, 1949 (397)

Cost of Open Storage Reservoir

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Mass., until 1:00 P.M., Eastern Standard Time, Thursday, October 27, 1949, and then publicly opened for Contract 187 for the construction of the Blue Hills Reservoir, in the City of Quincy, Mass. The work consists of the construction of an open storage reservoir formed by earth excavations and a rock fill type of embankment containing a core formed by a concrete core wall and consolidated impervious embankments, and containing consolidated gravel and crushed stone and rock fill embankments and with slopes of rough paving; of the gatehouse foundations and substructure, of a connecting steel-plate concrete-encased, mortar-lined pipe line; of a reinforced concrete pipe line for circulation of incoming water; of relocation of Chickatawbut Road including roadway pavements and appurtenant work; of grouting of the core wall foundations of the dam; and of the placing of slope protections, the construction of fencing, a spillway, drainage facilities and other work appurtenant to the reservoir construction and its connection with the 48-inch supply line. Each bidder shall deposit cash or a certified check as security in an amount not full amount of the contract will be required of the successful bidder to secure the faithful performance of the contract, and for the less than $10,000. A bond in at least the payment of all persons performing labor or furnishing materials in connection therewith. Special attention is called to the requirements as to conditions of employment to be observed and to the minimum rates of wages prescribed by the State Commissioner of Labor and Industries. A schedule of such rates is included in the contract and a copy may be obtained at the office of the Metropolitan District Commission. The information for bidders, and the prescribed forms of proposal, contract, and performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Karl R. Kennison, Chief Engineer of the Construction Division, upon the deposit of $10, to be refunded only to bidders or others returning them within ten days after the opening of bids. The site of the work and the existing conditions at and near the reservoir area may be seen by applying at the office of the Head Construction Engineer, 107 Charles Street, Auburndale, Mass. The Commonwealth reserves the right to waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

WILLIAM T. MORRISSEY, Commissioner
October 6, 1949.

Bids: November 1, 1949 (383)

Intercepter

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES

NOTICE TO SEWER CONTRACTORS

Sealed bids for constructing BLACKSTONE VALLEY INTERCEPTER, Sec. B., in Pawtucket, Rhode Island, will be received at office of State Purchasing Agent, State House, Providence until 10:00 a.m., Eastern Standard time on November 1, 1949 and publicly opened and read at that time.

Project involves 4,010 ft. of 60-in. sewer including approximately 2,565 ft. in tunnel, 3,730 ft. of 54-in. sewer, 265 ft. of 6-ft. 0-in. by 3-ft. 0-in. sewer, 535 ft. of 15-in. sewer, and appurtenant work.

Drawings and contract documents may be seen at above office or office of Blackstone Valley Sewer District Commission, State Office Building, or Metcalf & Eddy, Engineers, 1300 Statler Building, Boston, Massachusetts, Weekdays except Saturdays and holidays, 8:30 a.m. to 4:30 p.m., and may be obtained from office of State Purchasing Agent on $25 deposit.

Bid Security $50,000 certified check, bid bond, or cash, performance bond 100 percent.

Prevailing wage rates and Public Work labor laws applicable.

Franklyn A. Adams
State Purchasing Agent

Bids: November 9, 1949 (382)

Construction of Pumping Station, Pumping Equipment and Intercepting Sewers

Sealed proposals will be received by the Board of Contract and Supply of the City of Binghamton, N. Y., until 3:00 P.M. on Wednesday, November 9th, 1949, at its office in the Municipal Building and at which time and place the same will be opened and publicly read embracing the following Contracts:

1. Contract No. 5—General Contract Pennsylvania Ave. Pumping Station.
2. Contract No. 6—Pumping Equipment
3. Contract No. 7—Electrical Equipment
4. Contract No. 8—Plumbing Equipment
5. Contract No. 11C—Intercepting Sewers including River Crossing

Copies of drawings, specifications and other contract documents may be examined at the office of the City Engineer, City Hall, Binghamton, N. Y. and complete sets of such documents may be obtained upon the payment of $35.00 as a deposit for each set. If the documents are returned in good condition within thirty (30) days following award of this contract, $25.00 of the deposit for each set will be returned to each actual bidder; and $15.00 of the deposit for each set will be returned to each non-bidder, the balance being retained to defray the actual cost of reproduction of the sets of documents.

These proposals must be sealed and properly marked on the outside to indicate the contents and each shall be accompanied by a certified check or New York draft to the order of Everette E. Allen, Comptroller, or cash in the sum of five percent (5%) of the total amount of the proposal which amount will be held by the City without interest as a guarantee that the party or parties whose bid is accepted will enter into a contract and furnish a bond with security satisfactory to the Mayor in the sum of fifty percent (50%) of the amount of the contract.

The City of Binghamton reserves the right to reject any or all bids if such action is for the best interests of the City.

J. A. GILES, Acting Secretary,
Board of Contract and Supply.

Bids: October 18, 1949 (401)

West Side Sewage Treatment Plant

NOTICE TO CONTRACTORS
CONTRACT NO. 18 SLUDGE DISPOSAL
CITY OF BRIDGEPORT

Sealed bids for the construction of the West Side Sewage Treatment Plant, Contract No. 18 Sludge Disposal, will be received by Fred Schwarzkopf, Clerk of the Highway Committee of the City of Bridgeport, Conn., in the City Hall, Bridgeport, Conn. until 2:00 P. M. (E.S.T.) Friday, October 28, 1949 and then at said office publicly opened and read.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Performance Bond may be examined at said office and copies thereof obtained upon payment of $25.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded this payment and any non-bidder upon so returning such a set will be refunded $12.50.

The contract covers the construction of the sludge disposal portion of the West Side Sewage Treatment Plant including the reconditioning and installing of sludge collecting and skimming equipment in the existing settling tanks; a sludge disposal building housing sludge storage tanks, sludge and effluent water pumping, vacuum filtration and incineration equipment; revisions to the chlorination, screenings storage and water seal systems in the existing pumping station and the furnishing and installing of seven tide gates in existing chambers of the sewerage system.

The Highway Committee of the City of Bridgeport reserves the right to waive any informalities in or to reject any or all bids.

Each bidder must deposit with his bid, security in the amount of 10% of the amount of bid in the form and subject to the conditions provided in the Information for Bidders.

No bidder may withdraw his bid within 30 days after date of the opening thereof.

FRED SCHWARZKOPF, CLERK OF THE HIGHWAY COMMITTEE OF THE CITY OF BRIDGEPORT, CONNECTICUT
ADDRESS: CITY HALL
BRIDGEPORT, CONN.
September 30, 1949

(Continued on page 129)

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

U. S. Government
(Continued from page 128)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2804) will be received by Bureau of Reclamation, Yuma, Arizona, November 9, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of Wellton-Mohawk Pumping Plants Nos. 1, 2, and 3, Wellton-Mohawk Division, Gila Project, Arizona. The work is situated between 20 and 30 miles east of Yuma, Arizona. Principal items in six schedules are approximately: excavation 300,000 cu. yds.; concrete 10,000 cu. yds.; installing 1,260,000 lbs. major equipment; furnishing and installing 730,000 lbs. minor equipment, structural steel, and miscellaneous metalwork; furnishing and installing 2,500 lin. ft. 72-inch concrete discharge pipes; furnishing and installing electrical equipment and materials; and other work. Time allowed for completion will be 1,000 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (394)

OFFICIAL PROPOSALS

Bids: October 19, 1949 (392)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of. 1936, as amended, sealed proposals will be received until tenthirty o'clock A.M., eastern standard time on the 19th day of October 1949, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the elimination of the following grade crossings:

ERIE COUNTY

Cont. No.	Type	Name of highway and miles	Deposit for plans	Bid deposit	Dept. est.
PSC 5472	Asp. conc. opt., st. rein. conc. pavt. var. wdt. R.R. track changes	Elim. of grade crossing of the NYCRR with Erie St., West Seneca St., Church St. and the Terrace in the city of Buffalo	$20	$250,000	$4,520,000
PSC 5472	Buildings & misc. work	Elim. of grade crossing of the NYCRR with Erie St., West Seneca St., Church St. and the Terrace in the city of Buffalo	$10	7,000	125,000

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineer Charles R. Waters, 65 Court Street, Buffalo, N. Y., and may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioners of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: October 26, 1949 (393)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of (1) the Highway Law and special provisions therein for projects financed with federal aid funds, (2) the Public Buildings Law, sealed proposals will be received until tenthirty o'clock A.M., eastern standard time on October 26, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Greene	RC 49-120	Lexington-Prattsville, Pt. 2, S. H. 886	0.06	Asph. Conc. Opt. 48' I-Beam	$5,000 Plans $5	$89,000
Schenectady	FASGRC 49-121	Grade Seps. of the N. Y. C. R. R. and Schenectady-Guilderland, S. H. 577 Proj. SG350(11); S. G.850(3)	0.27	8" Cem. Conc. Pvt., 22'-42' Wide = 0.25 mi. 8" Cem. Conc. Pavt. Widening = 0.02 mi. Pump House and Equip.	$14,000 Plans $5	$253,000
Warren	FARC 49-96	Warrensburg-Chestertown, Pt. 1, S. H. 5157 Proj. FI490(6)	0.97	8" Cem. Conc. Pavt. 24'-40' Wide = 0.95 mi. Misc. Work = 0.02 mi.	$14,000 Plans $5	$240,000
Saratoga	M-97	Erie Canal Locks, 2, 3, 4, 5, and 6	....	Furnish and Replace Lower Lock Gates and Misc. Work	$13,000 Plans $5	$257,994
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Oneida	FASGRC 49-117	Elimination of Grade Crossing of the N. Y. C. R. R. with Whitesboro-Trenton, S. H. 5325 Proj. SG214(1)	0.28	8" Cem. Conc. Pavt., 22'-40' Wide 92' Plate Girder	$13,000 Plans $5	$230,000
		DISTRICT No. 3				
		WM. ROBINSON, District Engr., 301 E. Water St., Syracuse, N. Y.				
Cortland, Oswego, Tompkins & Wayne	RC 49-118	Br. No. 1, S. H. 5720; Br. No. 1, S. H. 1002G; Br. No. 2-S. H. 5214; Brnos. 2 and 3, S. H. 5294; Br. No. 4-S. H. 8095; Br. No. 1, S. H. 378; Br. No. 2, S. H. 8250; Br. No. 1, S. H. 510; Br. No. 1, S. H. 5141; Br. No. 1, S. H. 995; Br. No. 1, S. H. 1551; Br. No. 2, S. H. 8028; Brs. 2 and 10, S. H. 8420	....	Painting 15 Bridges	$1,500 Plans $5	$28,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Terminal, Buffalo, N. Y.				
Livingston	FASGRC 49-119	Elim. of Grade Crossing of the D. L. & W. R. R. with Greigsville Handet Underpass), S. H. 9200 Pavilion-Greigsville, Pt. 3, S. H. 1777 Proj. SG217(1)	0.13	8" Cem. Conc. Pavt. 24'-44' Wide, 54' Plate Girder	$10,000 Plans $5	$190,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court Street, Buffalo, N. Y.				
Erie	FAC 49-10 FARC 49-116	Hamburg Turnpike: City of Lackawanna, Lackawanna City, South, S. H. 5071 Proj. No. U750(3)	2.12	Asph. Conc. Opt. on Conc. Found. = 2.02 mi. Misc. Work = 0.10 mi.	$58,000 Plans $10	$981,000
		DISTRICT No. 6				
		H. F. BRUMM, Dist. Engr., 30 W. Main St., Hornell, N. Y.				
Chemung	RC 49-115	Erin-Vanetten-Spencer, Pt. 1, S. H. 1311 Wellsburg-Waverly, Pt. 1, S. H. 1764	0.44	Repairs to Retaining Wall	$1,000 Plans $5	$18,000
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster	FASS 49-29	Accord Bridge, Co. Br. No. 153 and Approaches Proj. S343(1)	0.07	Asph. Conc. Opt. 98' Sp. Alpha I-Beam Alpha = $76.02	$9,500 Plans $5	$163,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Kings	FABQE 49-3	Brooklyn-Queens Expressway Contract No. 12 Proj. U1066(10)	0.28	Viaduct Columns Footings and Misc. Paving	$45,000 Plans $20	$775,000
Suffolk	.....	Beach Protection, Jacobs' Point Beach	....	4 Conc. Block Jetties	$5% of bid Plans $5	$24,235

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by October 17th appear in October 27th issue subject to limitation of space available.

EXPERIENCED DETAILERS REINFORCED CONCRETE

Positions open now. 40-hour week. Excellent working conditions. All replies strictly confidential. Give full details and salary desired.

P-1153, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CIVIL ENGINEER

Must be college graduate and have preferably three years' inside or outside experience. Permanent position in engineering department of large contractor doing heavy construction work. Ambition, industry and desire to get ahead are more important than previous experience. Excellent opportunity for advancement, as most of our executives have worked up from similar positions. Location, Chicago. State age, education, experience, salary desired and references which will not be contacted without your consent.

P-1088, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION PROJECT MANAGERS SUPERINTENDENTS

During the next few months an internationally known engineering and building firm will require several top notch project managers and superintendents with proven ability to manage various sized industrial construction projects consisting of building construction and mechanical installations.

These positions offer lengthy employment, excellent working conditions and good salary for qualified applicants.

Please submit complete resumes setting forth experience, education, size jobs under your supervision, references and date of availability.

P-9980, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

STRUCTURAL ENGINEER

Western Pennsylvania fabricator desires structural engineer with thorough knowledge of shop fabricating costs of heavy industrial buildings and bridges. Commensurate salary. Permanent. Write:

P-1133, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

BRIDGE DESIGNERS DESIGNER DRAFTSMEN RESIDENT HIGHWAY ENGINEERS

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1078, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED: EXPERIENCED Structural Detailer, good opportunity. Address Arkansas Foundry Company, Box 909, Little Rock, Arkansas.

STRUCTURAL DRAFTSMEN. Require several first class experienced detailers and checkers for structural fabricating plant (in Detroit). Give complete information, experience and rate desired. P-1021, Engineering News-Record.

STRUCTURAL STEEL Detailers—Also Detailers for ornamental and miscellaneous iron. Experienced men only. Give all pertinent information. P-1082, Engineering News-Record.

PURCHASING AGENT Assistant for large construction firm. P-1110, Engineering News-Record.

EASTERN UNIVERSITY is seeking specialist in Photogrammetry who has had experience in surveying and practical photogrammetry, including use of stereoscopic mapping instruments and research. Background in geodesy highly desirable. P-1109, Engineering News-Record.

PROJECT MANAGER capable of managing several projects simultaneously with not less than five years experience as a field superintendent in charge of responsible work thoroughly familiar with field co-ordination, expediting, cost systems, establishment of field construction methods and management of field operations; permanent position, give complete resume of experience, age and employer references when applying. P-1134, Engineering News-Record.

CIVIL ENGINEER with demonstrated ability to assume responsible charge and at least 6 years experience in water supply design and hydrological work. New York consulting office. Salary open. State qualifications and salary expected. Replies will be treated confidentially. P-1123, Engineering News-Record.

WANTED: ENGINEER, Quantity Estimator for Industrial and Public Buildings. Midwest location. Give complete details, age, salary expected, etc. P-1142, Engineering News-Record.

POSITIONS VACANT

WANTED-CITY Engineer. Experience in sewer, water, and paving work. Must be a registered engineer in North Dakota or able to qualify. Starting salary $4800, to $6000. Write City Manager, Minot, North Dakota.

STRUCTURAL STEEL detailer and checker, experienced, steady job, salary open. Send full experience record to P.O. Box 955, New Haven, Conn.

ENGINEERS-TWO Material Testing Engineers. College graduates or equivalent training, with basic knowledge of strength of materials. Should be familiar with conventional laboratory and field methods of sampling and testing various types of construction materials. Personnel Director, Washington Suburban Sanitary Commission, Hyattsville, Maryland.

GRADUATE MECHANICAL Engineer with at least five years experience in Thermodynamics, Air and Gas Flow, specializing in Research, for permanent position with Research and Development Division, New Mexico School of Mines, Socorro, New Mexico.

CIVIL ENGINEER as Resident on construction of earth dam. Must have recent experience. Immediate employment with good future possibilities. Apply to Mr. Moore, 819 Commercial Trust Bldg., Philadelphia 2, Pa.

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SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

STRUCTURAL ENGINEER, graduate, licensed, 25 years experience design and construction of subways, buildings, foundations, waterfront structures, etc., and analysis of indeterminate structures. PW-9959, Engineering News-Record.

(Continued on the opposite page)

WANTED ESTIMATOR

General Contractor located near Chicago, operating nationally, has opening for top-flight man. Reply in confidence, give background and experience. Commensurate salary.

P-1079, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ARCHITECTURAL, ELECTRICAL, MECHANICAL, STRUCTURAL

Men for immediate permanent employment in drafting room positions as job captains and squad leaders. Do not apply unless well qualified for work on building construction. State schooling, experience and salary expected.

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LEARN TO ESTIMATE

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Monthly payments permissible. Information sent without obligation. WRITE TODAY

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POSITIONS WANTED
(Continued from opposite page)

GENERAL CONSTRUCTION Superintendent or Project Manager. Graduate Civil and Mechanical Engineer, 15 years experience as General Supt. on varied projects including refineries, power and industrial plants, utilities, housing, earthwork and docks. Past six years on foreign work, speaks and reads several languages. A-1 references. Native American, good health. Foreign assignment preferred. Available immediately. PW-9945, Engineering News-Record.

STRUCTURAL DESIGNER. Ten years experience, steel and concrete comm'l, ind'l, bldgs., power plants, and copper mine structures. Prefer Met. New York. Will relocate for opportunity. Available now. PW-9924, Engineering News-Record.

CHIEF ESTIMATOR or Contractors Manager. 20 years with large and moderate size General Contracting firms on buildings, waterworks and heavy construction. Experience covers bidding and negotiating contracts also buying, organizing and managing construction projects. Available on short notice. Interested in straight salary, salary and bonus or partnership. PW-9984, Engineering News-Record.

CHIEF DRAFTSMAN Structural desires connection small progressive shop. "Sweat" shop and fabricating shop experience. Good organizer. PW-9983, Engineering News-Record.

CIVIL ENGINEER—20 years experience in layout and supervision of construction of industrial plants, commercial buildings, highways and bridges. Free to travel. Available immediately. PW-1008, Engineering News-Record.

CIVIL ENGINEER, Graduate, age 28, married, desires cost engineering work. 6 years of varied engineering experience. PW-1143, Engineering News-Record.

POSITIONS WANTED

FIELD ENGINEER—30 years experience, U. S. and South America-industrial plant construction, water power development, docks, housing, etc., foreign location preferred. PW-1075, Engineering News-Record.

CIVIL ENGINEER, recent honor graduate, diversified army engineering experience. PW-1052, Engineering News-Record.

POSITION AS Rigger or Iron worker foreman wanted . . . 10 yrs. experience as foreman . . . Will go anywhere . . . best of references. PW-1083, Engineering News-Record.

MASTER MECHANIC, equipment superintendent or service manager twenty years experience in the operation, repair and maintenance of all makes of heavy equipment also all phases of shop management and parts procedure, available immediately and will go anywhere. PW-1091, Engineering News-Record.

STRUCTURAL ENGINEER, 25 years thorough responsible experience in design, checking, rigid frame analysis. Highest qualifications. PW-9755, Engineering News-Record.

CONSTRUCTION EXECUTIVE, thirty years sound experience, every phase of building and heavy construction, will terminate present connection January 1st or sooner. Interested in responsible position where scope requires high grade man. PW-9760, Engineering News-Record.

CONTRACTOR'S RIGHT Hand Man—Experienced Manager, Engineer-Estimator. Purchasing Agent on: Commercial, Multi-Residential, Industrial Bldg., Construction, Including all Utilities; and on Engineering Construction covering Airports, Marine Facilities, Railroads, Roads, Quarry Operations. Desires permanent position as Manager, Estimator, Purchasing Agent for Gen. Contractor. Good background for position of Area Sales Manager for Cement Co., Bldg Supply Co., Equipment Dealer. In reply state exact salary connected with position open. References. PW-9913, Engineering News-Record.

CIVIL ENGINEER Or Superintendent desires another assignment to Spanish Speaking Latin America. American citizen, graduate engineer, registered, age 37, with 14 years experience in light, and heavy construction, highways, railroads, surveys, and reports. Able to speak Spanish and work both Gringo and Indian labor. At present in South America, but available for new assignment about Jan. 1st. PW-1158, Engineering News-Record.

PRACTICAL FIELD Engineer, 28 years experience general construction, survey and mapping; buildings, plants, utilities, highways, transmission lines, housing, some estimating and supervision. Desires position with engineering-contracting firm, contractor or municipality. PW-1157, Engineering News-Record.

STRUCT. DRAFTSM. Europ. degrees, long experience overseas, 1½ year USA, buildings, R. C. bridges, indetermin. systems, prefer East. PW-1149, Engineering News-Record.

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CONSTRUCTION SUPERINTENDENT

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POSITIONS WANTED

CIVIL ENGINEER, registered, 32, now completing job as resident on hydro-electric construction project, seeks a similar position, U. S. or foreign. Ten years construction and water works experience, 3 in S. America. Speaks Spanish, Univ. grad., married. PW-1101, Engineering News-Record.

MUNICIPAL ENGINEER. Civil Engineer, graduate registered, with outstanding record in public works design construction and maintenance, including ten years with progressive municipality, available as senior engineer with municipality or consultant. PW-1114, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. 25 years experience industrial and building construction excavations, and foundation work. Organizer and producer of quality work. Midwest or western location preferred. Available in near future. PW-1108, Engineering News-Record.

15 YEARS practical experience in planning and sales administration construction equipment, including knowledge of teaching in service and maintenance of equipment and power units. Material handling. PW-1121, Engineering News-Record.

(Continued on page 132)

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Business Opportunity Advertising—page 132

Steel Fabricating Plant

Well established reinforcing and structural steel business. Located in southeast Florida. Increasing volume and resultant expansion necessities additional capital.

Owners will sell up to 50 per cent of equity to interested party.

BO-1107, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

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Midwest Location—One or All
Attractive Price—No Dealers

FS-1130, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

(Continued from page 131)

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N.W., Washington 5, D.C.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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1. The name and address of the publisher, editor, managing editor, and business manager is: Publisher McGraw-Hill Publishing Company, Inc., 330 West 42nd St., New York 18, N. Y.; Editor W. G. Bowman, 330 West 42nd Street, New York 18, N. Y.; Managing editor E. E. Halmos, 330 West 42nd St., New York 18, N. Y.; Business manager H. T. Olsen, 330 West 42nd St., New York 18, N. Y.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: 41,715.

McGRAW-HILL PUBLISHING COMPANY, INC.
By J. A. GERARDI, Secretary.

Sworn to and subscribed before me this 16th day of September, 1949.

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[SEAL]
(My commission expires March 30, 1950.)

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W-1132, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

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45-ton Used Steam Locomotive Crane

Give age, make, condition and price. Include location, length of boom and type of side frames.

W-1128, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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TD 9 or UD 9 International Motor Block or complete Motor
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Backhoe in good condition for ¾ yard late model Link Belt Speeder

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Lorain 41, ¾-yd shovel, crane or hoe, new 1949.
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Lorain 41 backhoe, LBS#5429, with 18' boom, 7' stick, 36" cutting width Amsco bucket. Will fit any ¾-yd Lorain with serial number over 9.000.
Backhoe attachment for Lorain or Northwest 1¼-yd machine

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20" x 6'6" Belt Type Magnetic Separator.
3018 Cedarapids roller bearing roll crusher, new condition, new warranty, used as demonstrator only.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 36 Cedarapids, practically new.
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Cedarapids No. 1 Kubit.
100 ton 3 compartment storage or aggregate bin with or without batcher and scales.
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1½-ton Ford & Chevrolet.
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Van Trailers with 17' x 7'8" x 6' bodies. Five ton capacity.
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Jaeger type "L" double screed, 10½'-12½', rebuilt.
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Blaw-Knox gas-electric 10½'-12½', rebuilt.
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Koehring 10'-16' finisher, rebuilt.

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1380'—Heltzel 7"x8" forms, with stakes.
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New 18"—24"—30"—36"
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Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
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42"	5	1/8"	1/16"	20"	5	1/8"	1/32"
36"	6	1/8"	1/16"	20"	4	1/8"	1/32"
30"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	5	1/8"	1/16"	16"	4	1/8"	1/32"
26"	5	1/8"	1/32"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"

Inquire For Prices — Mention Size and Lengths

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	Width	Ply	Width	Ply	Width	Ply
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	16"	6	10"	5	5"	5
	14"	6	8"	6	4"	5
	12"	6	8"	5	4"	4
	12"	5	6"	6	3"	4

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"A" Width All Sizes —
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APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
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I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
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I.D. Size	Length	per Length	I.D. Size	Length	per Length
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	50 "	8.00		40 "	12.00
1"	25 "	6.25		50 "	15.00
	50 "	12.50	1¼"	25 "	10.00
1¼"	25 "	7.50		35 "	14.00
				50 "	20.00

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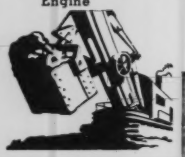

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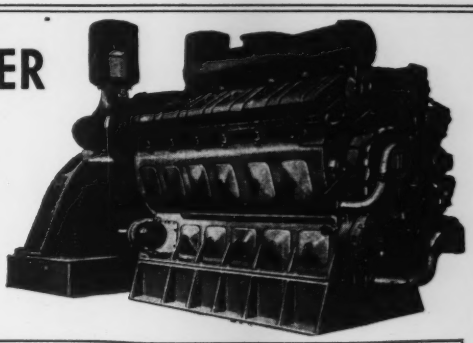

A PARTIAL LIST OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8⅛	1600	720	330	Superior	KNA	396	514
1250	General Motors	16–278A	1600	720	312	General Motors	8–268A	450	1200
937.5	General Motors	12–567	1080	720	187	Ingersoll Rand	S	225	514
625	Alco	6–12½x13T	750	600	125	General Motors	3–268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200

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Centrifugal, 20 gals. to 2500 gals.
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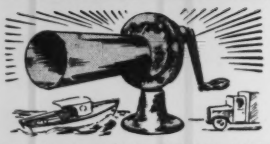

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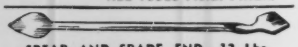

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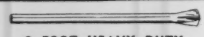

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1⅛" Bar—2" Cutter—$3.00 Val. **$1.00** EA. FOB. Phila.

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Reconditioned (Like New)

Insley ½ yd	$4500.00
P & H ½ yd	4500.00
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Buckeye model 120 ditcher with 2 sets of buckets one set never used, machine looks like new in A1 shape.

Price $10,250.00

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60 ton—2½ cu. yd. capacity Combination cranes, dragline and clamshells, caterpillar mounted—diesel powered. Reply

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FS-1030, Engineering News-Record
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125' Boom, 6 yd. Bucket, 390 H.P. Engine Never used, immediately available, central location. Address

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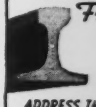

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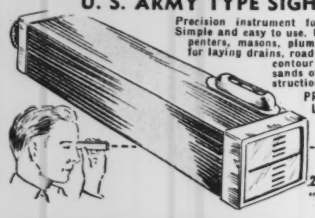

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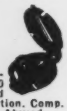

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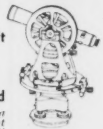

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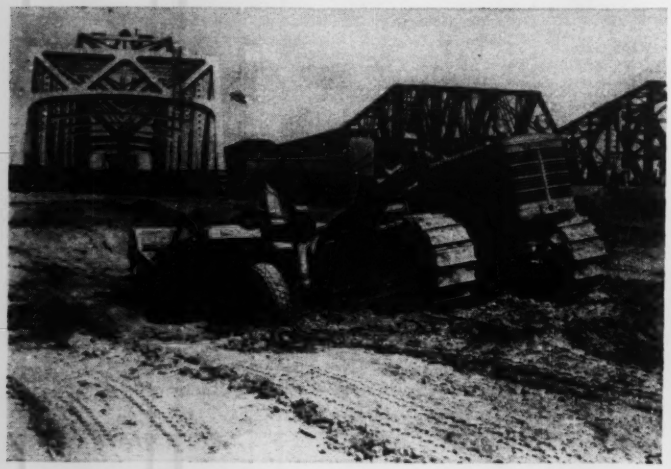
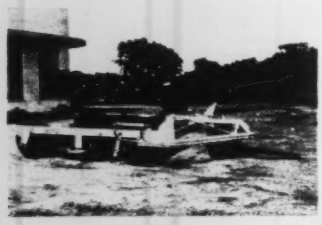
NEW PRODUCTS



Work Capacities Stepped Up for Diesel Crawler Tractors

Improved models feature greater work capacities, increased operator comfort and reduced maintenance. The TD-18A has 87 drawbar horsepower, 107 net engine horsepower at the flywheel, and 101 belt horsepower. Drawbar pull is rated at 22,400 lb. in first gear with engine operating at maximum torque. Other features include 20-in. shoes as standard equipment, six speeds forward, with a maximum of 5.7 mph., and two in reverse, with a maximum of 3.5 mph. The TD-14A has 76-hp. at the engine flywheel, 60.5 at the drawbar, and 72 belt. Maximum drawbar pull is 16,600 lb. in first gear. Speeds are the same as the TD-18A. New-type lubricating oil filters require changing after 240 hours of operation under normal conditions. — International Harvester Co., Consumer Relations Dept., 180 N. Michigan Ave., Chicago 1, Ill.



Mechanical Rock Picker

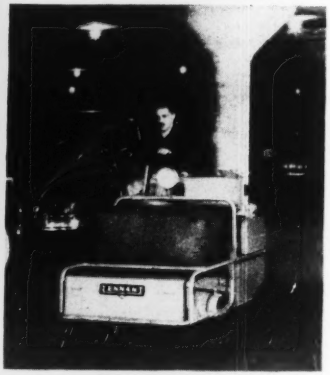
Trailer-type rock picker separates and gathers rocks as small as 3-in. in diameter. Depth control bar is adjusted by means of turnbuckles. Hydraulically controlled, the hydraulic pump shown in the illustration is optional depending upon the tractor used. The Jochim picker has 26 spring-steel tines covering an 8-ft. swath.—Minn-Kota Mfg. Co., 201 Seventeenth St., N., Moorhead, Minn.

Air-Line Drain Valve

An automatic air-line drain valve is designed for use with all compressed-air operations. It is said to automatically drain all water and oil that collect in the line, together with dirt, rust flakes, dust particles, or abrasive material each time air is used. The valve will handle up to 28 cfm of air at 100-pounds pressure.—Wilkerson Valve, Inc., 260 S. Dale Court, Denver, Colo.

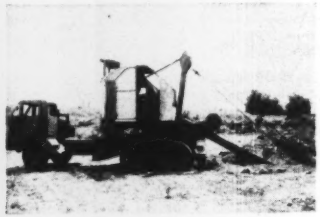
Floor Forms Leave Air Spaces

Prefabricated forms permit construction of floor section which is arched above the fill and which provides a dead-air space under 75 percent of the floor area. The Westbilt forms are especially designed for use in basementless buildings. They are made of a water-repellent material, structurally sound and bridged to withstand normal field usage and weather conditions. These forms—when properly supported—can be used with reinforced concrete in thicknesses up to 8 inches. The Westbilt forms provide a base for partition fasteners and radiant heat coils. Alterations for piping turnups are made by any cutting instrument. — Westbilt, Inc., 93 Tiffany Blvd., Newark 4, N. J.



Powered Garage Sweeper

Quickly removes grease, dust, tar, oil, mud and other dirt from the floors of highway maintenance shops, equipment garages, and other shops equipped with concrete floors. Powered by a 6-hp. engine, the unit cleans a path 36-in. wide at speeds up to 6 mph. It has a 36-in.-dia. steel wire or fiber brush which floats on the floor surface as it revolves inside a vacuum compartment. Heavy litter and soilage is hurled into a 9-ft. hopper; lighter dust is sucked into a double-envelope bag.—G. H. Tennant Co., 2530 N. 2nd St., Minneapolis 11, Minn.



Movable Crane Base

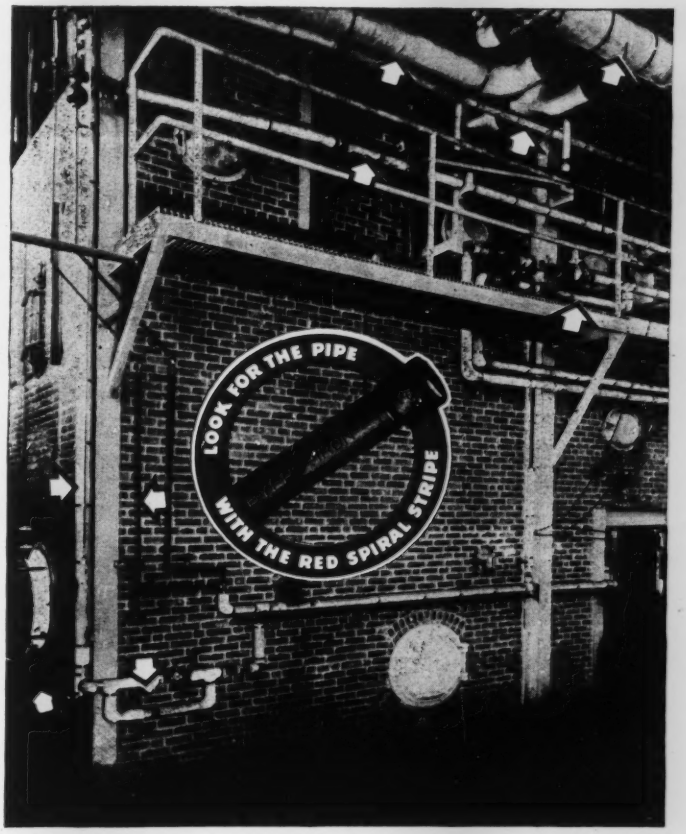
Patented movable base is designed for mounting the upper works of cranes, shovels, or hoes on truck chassis. The sliding base permits the upper revolving unit to be moved forward for crane work and backward for shovel and hoe work. The forward position during crane work increases stability while the backward position shortens the distance over the cor-

(*Continued on page 148*)

BYERS WROUGHT IRON PIPE

safeguards 10 services

IN THIS NAVAL AIR STATION POWER PLANT



The new power plant at the Naval Air Station, Squantum, Massachusetts, reflects the "build to last" standards of the Navy Department Bureau of Yards and Docks. In ten services where corrosion was a known or potential hazard, Byers Wrought Iron pipe was used. The applications included main steam header; main steam distribution lines; condensate return circulating lines; boiler feed lines; feed water regulator lines; fresh water make-up lines; drip lines; water column lines; steam lines for atomizer; and oil lines. Pipe sizes ranged from ⅜-inches to 8-inches.

Almost every piping service in a power plant carries some threat of corrosion, and in many instances the only assured protection is through the use of a material with demonstrated ability to resist the attack. Wrought iron has established some excellent records for dependability in plants all over the country, and any engineer who is looking for lowest cost per year in his installation piping will find it profitable to investigate the material.

Wrought iron's durability comes directly from its unique composition and structure. The tiny fibers of glass-like silicate slag that are threaded through the body of high-purity iron halt and disperse corrosive attack. This discourages the pitting and penetration that generally cause low-first-cost materials to fail. Furthermore, the fibers anchor the initial protective scale which shields the underlying metal.

If you are concerned today with the construction, replacement, or repair of any boiler plant services, you will find some helpful information in our bulletin, WROUGHT IRON FOR PIPING SYSTEMS. It discusses the various corrosive conditions encountered, and reports the experiences of engineers in combating them. Ask for a complimentary copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.

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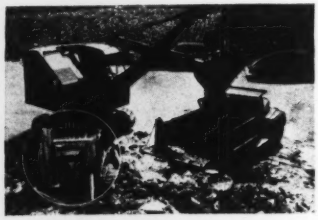
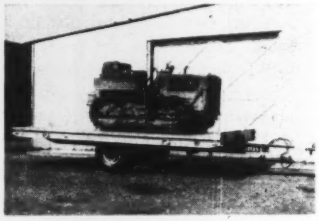
ners, which thus increases the radius of work for shovel and depth of trench for hoe work.—INSLEY MFG. CORP., 801 N. OLNEY, INDIANAPOLIS 6, IND.



Half-Yard Shovel Crane

The Model LS-51 is equipped with full-hydraulic variable-pressure controls This is the first half-yard shovel-crane to be equipped with Speed-o-Matic controls. The LS-51 is fully convertible for operation as a shovel, trench hoe, lifting crane, dragline, clamshell, or pile driver. Independent rapid boom hoist provides hoisting and lowering of the boom under power of the engine. Independent travel and swing are available. Hook-type conical rotating rollers, individually mounted, travel in a roller path 53 inches in diameter, providing high stability.—LINK-BELT SPEEDER CORP., 307 N. MICHIGAN AVE., CHICAGO, ILL.



Tilt-Deck Trailer

Capacity of the new Rogers tilt-deck trailer is 7 tons. Road clearance is 16 in. when the trailer is equipped with 14-ply 8.25x15 tires. The platform is 16x8 ft. and is 34-in. high. Air or vacuum brakes are optional. A double-acting hydraulic ram cushions the deck when it is being raised or lowered.—ROGERS BROS. CORP., 135 ORCHARD ST., ALBION, PA.

Mineral Colors for Concrete

Long-lasting mineral colors are made from commercially pure mineral-oxide, ground to a fine uniform particle size to assure correct pigmentation at lowest possible percentages. They are recommended for use in concrete, plaster, stucco, and other mortars. The Vitro Masonry colors are said not to fade, even when exposed to direct sunlight, nor to affect the strength of the masonry. Colors available are blue, green, brown, yel-

(*Continued on page 150*)

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Kodagraph Contact Paper assures improved results, lowers production costs with any type of contact photocopier. It reproduces your office work or drawings in dense photographic blacks, brilliant whites . . . on a non-curling, high-quality paper base. *Kodagraph Contact Cloth* gives you reproductions of maximum durability. Its highly translucent white base assures fast, even printing in the production of blueprints or direct-process prints.

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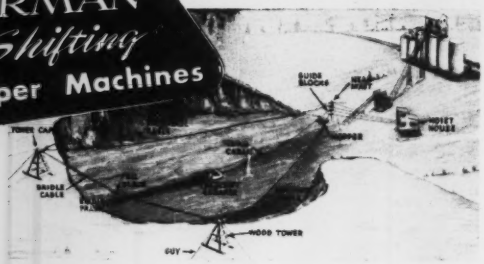

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Allows operator maximum speed and efficiency in spotting scraper bucket wherever desired.

NEW SERIES, Sauerman Power Drag Scraper Machines give operator at scraper hoist COMPLETE AUTOMATIC CONTROL of shifting tail end of machine—and instant spotting of scraper bucket wherever he wishes. Results: greater speed and economy—time and labor saved.

Heart of machine is Sauerman 3-drum hoist and elevated tail bridle assembly. Bridle cable is stretched between 2 tail towers. Bridle frame for tail block rides on cable. Third drum of hoist moves bridle frame in one direction and pull of outhaul cable, the opposite. Drum braked holds it positioned as desired. (See picture above).

Equipped with ⅓ to 4 cu. yd. Crescent buckets. Gasoline, electric, or diesel 3-drum roller bearing hoist furnished with each machine. Normal cable spans from 200 to 400 ft., can be extended if necessary.

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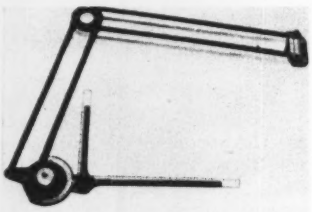
low, red, and black. Variations of shades are obtained by mixing the pigments.—VITRO MFG. CO., 60 GREENWAY DRIVE, CORLISS STATION, PITTSBURGH, PA.



Precision Drafting Machine

Model D Wrigraph eliminates obstruction on top of drawing boards. Unit mounts in extreme right-hand corner and permits free movement of the scales over the entire drawing area. It is a portable unit for use on any 20x26-in. drawing board. Available in two sizes, the unit has interchangeable scales in all standard graduations. Protractor can be locked at any angle. L. G. WRIGHT, INC., BOX 63-AO, CLEVELAND 21, OHIO.

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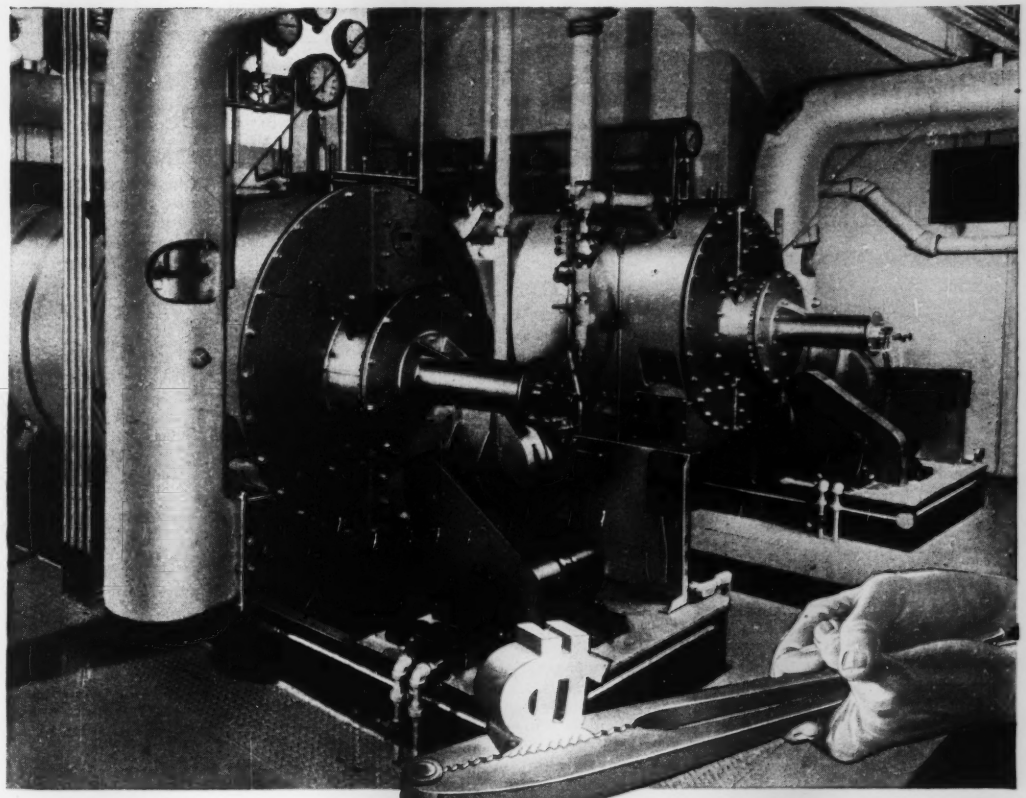
Improved curing blanket for all types of concrete road construction meets all curing specifications including proposed changes relating to construction and scuff resistance. Also meets improved tests for tensile strength, puncture, shrinkage, and moisture-vapor transmission. Scutan is available in 12-ft.-wide rolls.—UNION BAG & PAPER CORP., WOOLWORTH BLDG., NEW YORK 7, N. Y.

Cotton-Base Acoustical Tile

Cotton-base acoustical tile is said to filter out harshness, reverberation, and echoes and to eliminate dead areas and fluttering in high and low frequencies. The tiles are manufactured in 12-inch-square sections which weigh 3 ounces. Acoustical correction is obtained by the diaphragmatic action of the tile's surface. The manufacturer advises that the tiles are flameproof.—HEERWAGEN ACOUSTIC DECORATION CO., FAYETTEVILLE, ARK.

Surveying Instruments

Production has resumed on a complete line of surveying equipment including Dumpy, Abney, builders', and hand levels. Curtailed by the war, the present line includes new improvements and new designs with lighter-weight material and larger face dials.—LEUPOLD & STEVENS INSTRUMENTS, 4445 N. E. GLISAN ST., PORTLAND 13, ORE.



Put the Squeeze on

Steam Costs

NEVER forget boilers burn dollars — dollars that represent steam costs and a goodly share of your operating costs. Conditions today demand that you put the squeeze on steam costs along with your other costs. Begin with your boiler — investigate to see how much it is giving you for your fuel and operating dollars — see if it measures up in earning power as well as horsepower.

For any boiler installation (15 to 500 HP.) — new or replacement — Cleaver-Brooks offers these immediate and long range cost-saving advantages:

A Custom-Planned Boiler Engineered for Your Needs: Your steam needs and steam-using equipment are studied — your present total steam load plus your estimate of future expansion are considered — with this information the size of Cleaver-Brooks Boiler best suited to your specific needs is determined.

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Flexible Operation Burning Gas or Oil With Equal Efficiency: You can use oil, gas, or combination oil and gas, whichever is of lower cost. Through their high heat transfer, Cleaver-Brooks boilers operate at a guaranteed efficiency of 80% from full load down to 30% of rating.

In addition, Cleaver-Brooks boilers give you clean, smokeless operation — eliminate fuel and ash handling — require no high or costly stacks — no special foundations — fit under low headroom — provide quick steaming, flexible operation to meet fluctuating loads — fully meet all codes.

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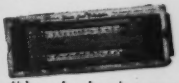
389 E. Keefe Ave., Milwaukee 12, Wis.



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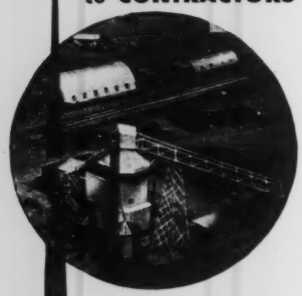

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MANUFACTURERS' PUBLICATIONS

Roof-Framing Suggestions — Four new suggestions are available on the economical framing of one-story school classroom buildings. The new designs, which show varied methods of covering the spans most generally required in modern classrooms, are intended to help designers in meeting the trend toward the rambling type of school construction. The four suggestions illustrate the use of cantilevered trusses, two saw-tooth-type trussed rafters joined at the ridge, inverted trussed rafters, and cantilevered trusses supporting side roof joists with steel rods. Full information is also available on other types of designs plus dat.. on the connector system of timber construction. —Timber Engineering Co., 1319 Eighteenth St., N. W., Washington, D. C.

Flume, Wier-Flow Recorders—Application data sheets describe "Parshall Flume and Weir Flow Recording Controller". They are intended as practical tools for use in planning and estimating and in preparing specifications. The sheets contain dimensional diagrams for different types of flumes and weirs, tables of flow values, specifications for standard instruments for flow measurement or control, and suggested working of an acceptable procurement form for soliciting contractors' bids.—The Foxboro Co., Foxboro, Mass.

Lightweight Pump—Bulletin LP-9 covers the Model 1½-AP and Model 2 PAF lightweight pumps. The smaller unit has a weight of 90 pounds; the larger, 105 pounds. The bulletin contains illustrations of these pumps in use, describes their advantages, and list specifications and dimensions for each. Also listed, is a table of performance characteristics.—The Jaeger Machine Co., 550 W. Spring St., Columbus 16, Ohio.

Road-Equipment Catalog — Lists properties and specifications of the Model PG-10 power grader, the Model 30 maintainer, and accessories for use with them including front-end loader, crane hook, bulldozer, backfiller, and snow plow. Grader attachments described in Bulletin No. 144 include modern cab, blade extension, electric lights, and leaning wheels. Specifications listed for the grader cover dimensions, speeds, controls, blade assembly and range, weights, engine specification, and construction and operation features. The catalog contains many photographs showing the equipment in use.—Meili-Blumberg Corp., New Holstein, Wis.

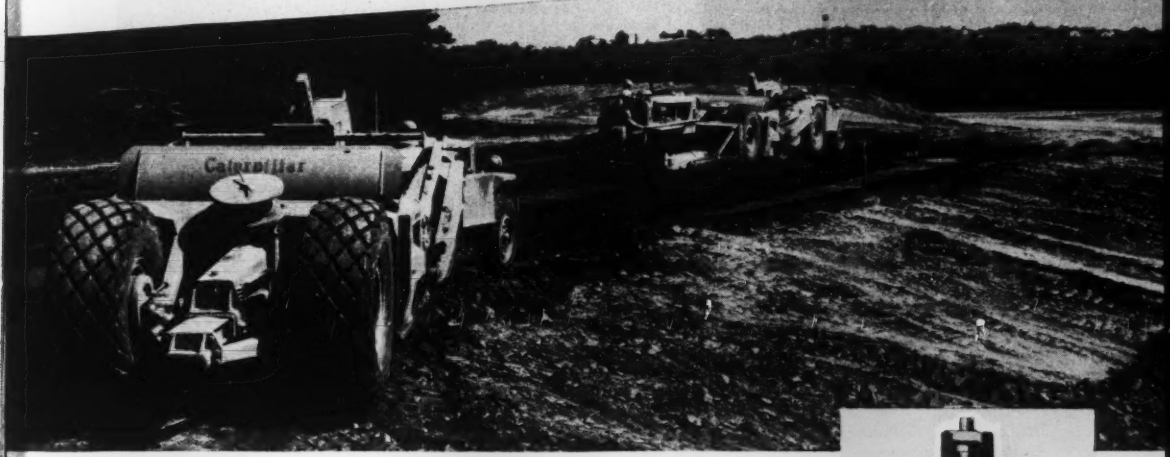
Globe and Angle Valves—Circular 101 describes bronze globe and angle valves equipped with renewable composition disks. The folder is illustrated with photographs of the construction features of these valves recommended for services up to 150-lb. steam, or 300-lb. cold water, oil, air, or gas. A large blow-up of a sectional drawing of the Kennedy Figure 89 gives visual reference and explanation of the valve. A table of available sizes and dimensions is also included. — The Kennedy Valve Mfg. Co., 1021 E. Water, Elmira, N. Y.

Metallizing Applications—Prevention of corrosion by metallizing processes is explained in detail in Bulletin 62. This catalog tells how to use metallizing on tanks and degreasers, on bridges and structural steel, on barges and dam gates, and similar surfaces subject to corrosion. Bulletin describes the metallizing process in detail, as well as showing its actual application. — Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.

Crane, Shovel Cost Guide—Bulletin explains how to estimate cost of ownership, operation, and maintenance of power cranes and shovels. Technical Bulletin No. 2 classifies costs according to fixed costs (depreciation, interest, repairs, maintenance, etc.), operating costs (fuel, oil, and labor), and other costs (indirect or overhead, supervision, etc.). The bulletin describes each of these in detail, as well as explaining how to compute them.—Copies of this 24-p. pamphlet are available at 50¢ each. Complimentary copies are available for engineering schools.—Power Crane & Shovel Association, 74 Trinity Place, New York 5, N. Y.

Vibrating Screeds—Four-page bulletin point out these advantages of Stow vibrating screeds: They leave the surface of the slab so true that it is practically finished; with a given water-cement ratio they permit a 10 percent reduction in cement, saving 30 cents a cubic yard in a roadway slab 20 ft. wide and 8 in. deep; they permit placing more than 300 yd. of 8-in. slab in less than 8 hours.—Stow Mfg. Co., Binghamton, N. Y.

HOW TO STEP UP PRODUCTION AND STEP DOWN COSTS



For high-minute production hours the Peden Construction Co., Greenville, S. C., relies 100% on "Caterpillar" equipment. On this grading job for a new textile plant near Pendleton, this progressive outfit is using two "Caterpillar" Diesel DW10 wheel-type Tractors with matching No. 10 Scrapers.

These big yellow machines are really going to town for Peden. Their hard-hitting horsepower, hydraulic booster steering, air brakes and finely engineered design add up to performance that pays off. Here they total approximately 1200 pay yards per 8-hour day, working on an average haul of 2500 feet. Pusher loaded by an 80 drawbar hp. "Caterpillar" D7 Tractor, they pick up 8.8 pay yard loads in one minute or less. Production per hour per unit runs up to 75 pay yards, with about 8.5 round trips tallied each hour.

"DW10s are good equipment for this job—they are cheap to operate," says H. L. Peden. "We like 'Caterpillar' from the dealer's service right on through to the machinery."

You'll get straight answers from your "Caterpillar" dealer. Talk over your production problems with him—he'll go all out to help you lick them.

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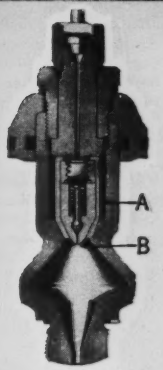
HI-EFFICIENCY FUEL INJECTION VALVE



Typical of the quality built into "Caterpillar" Diesel Tractors are the fuel injection valves. Capsule (A) is easily removable for unit replacement in the field. No adjustments are ever necessary. Single-orifice opening at (B) prevents clogging and maintains desirable fuel spray characteristics at all times. Countless "Caterpillar" Engines have operated many thousands of hours without the need for capsule replacements.

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Standardized, self-enclosed starter units make building-on easy— As your system expands, these new motor-starting units can be replaced easily with larger ones because widths are uniform, heights proportionate. Complete new sections can be added alongside, or backed-up to, existing sections. Front-connected wiring and snap-on contacts make installation and servicing easy.

Development of this control center is yet another proof that General Electric keeps abreast of commercial-building needs with complete electric equipment for elevator, pump and blower drives—power distribution and conversion purposes. Your nearest G-E sales office will have an application engineer help you plan your entire system. Also, write for Bulletin GEA-4979, "New G-E Motor Control Center." ***Apparatus Dept., General Electric Co., Schenectady, N. Y.***

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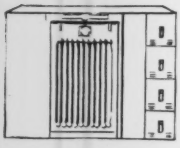

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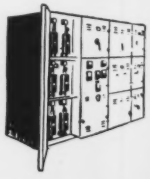

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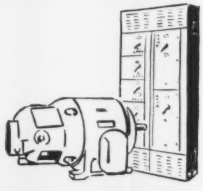

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READER COMMENT

Holland Tunnel Fire

Sir: As a former assistant engineer on the staff of chief engineers Holland, Freeman, and Singstad for the designing of the Holland Tunnel I have followed its successful operation with interest.

For many years the twin ventilated tubes have served without serious mishap until May 13 of this year when one million dollars worth of damage and injury to 66 persons was caused by a chemical explosion and fire. The fact that it was not a major disaster of far greater proportions is due to the designing engineers who foresaw the necessity of providing facilities and equipment to move vast quantities of air through the tubes.

However, the engineers could not foresee that their tunnel regulations limiting the transportation of carbon disulphide through the tube to 100 gallons would be violated. They could not prevent the negligence or stupidity which sent a 16 ton trailer truck loaded with 44 times the maximum allowable load of highly inflammable mixture through the tunnel, creating a hazard that might well have destroyed a project that was the result of years of planning and the expenditure of millions of dollars.

While the newspapers featured the extent of the damage and the skill of those who successfully fought against disaster, I have failed to see that any responsibility has been fixed upon the person or persons who jeopardized the lives and property of others through direct violation of the safety limitations imposed by the engineers.

If a building floor or bridge collapses due to live loadings in excess of posted permissible loads and carries innocent users to their deaths, the responsibility can usually be fixed. The case is analogous. Safety rules are worthless unless enforced and their violations severely penalized. In the interests of public safety, heavy penalties should be imposed for any and all infractions of safety limitations devised and set by designing engineers.

ERIC FLEMING
New Brunswick, N. J.

Correction

A picture caption on page 32 of Engineering News-Record's August 4 issue inadvertently gave the depth of the work-shaft built for construction of Cincinnati's new water-supply tunnel as 1,835 ft.

The tunnel itself is being built to more than double pumping capacity from the treatment plant to the city.

The printer—rather than the engineers—was responsible for creating the remarkable depth of this shaft. Actual depth is 135 ft.—Editors.

Watch-Chain Transit

Sir: This is in regard to Mr. Thomas E. Riley's article in your August 11th issue entitled "A Surveying Instrument for Your Watch Chain".

The discussion of "watch pocket transits" is very interesting and the instruments described are very useful for certain reconnaissance and checking purposes, but Mr. Riley's claims for these little hand tools, to my mind, are highly exaggerated. The opening sentence in his fourth paragraph—"In ordinary surveying they can replace transits on many jobs, especially land surveys and construction projects"—will serve as an example. How can a line determined by two moving sights, the hand and the eye of the observer, give accuracies of one in ten thousand or even one in three thousand? And how can the user be sure that he is over his point when making the observation?

I saw one of these tools mounted on a light tripod at a recent Michigan Engineering Society Convention, but even so mounted it is useful only for approximations, similar to the use of a plumb bob string to line in a point. The prism has a distinct value for certain uses, but to claim that it can replace a transit on "many jobs" seems to be stretching things too much.

Another question that I would be interested in having answered is: What is "ordinary surveying"? Are there not already too many people who own a transit who are ordinary surveyors? Persons who with only the most elementary knowledge make boundary surveys, and establish property corners under the pretense of being surveyors. If a "transit" can now be purchased for some $25 that will enable everyone to be his own surveyor, or if land surveyors are to use such a tool for "many surveying jobs", may the Lord help the next generation unscrambling the mess that their property lines will have gotten into by that time.

One statement of Mr. Riley's that I would agree with is that a two man crew with this tool will progress much faster than a four man crew with a transit. But I would also point out that one man with a hand compass, pacing his distance, would progress much faster than the two man crew. The difference is in the accuracy of the work.

W. B. WILLIAMS
Registered Surveyor and Civil Engineer
Grand Rapids, Mich.

Post- or Prestressing

Sir: I should like to support the views you expressed on this matter in ENR July 14, p. 100, which have just come to my notice, especially since I introduced the expression post-stressing in "Concrete and Constructional Engineering" in 1941 only to realize later that the term was inappropriate. As you say, prestressed concrete signifies that the stresses are introduced before the construction is loaded, and similar expressions are used in French (beton précontraint) and German (vorgespannter Beton).

To distinguish between the times of tensioning the steel, I suggested in the JOURNAL of the ACI, Jan., 1945, the expressions prestretching for the process whereby the steel is stretched before the concrete is placed, the prestress being transmitted to the concrete mainly by adhesion—and post-stretching when the steel is stretched against concrete after it has hardened. These expressions were modified to pretensioning and post-tensioning in articles in CIVIL ENGINEERING, London, 1948, and in my book, "Principles and Practice of Prestressed Concrete". These terms have been generally adopted by British engineers, as will be seen from the report of the Institution of Civil Engineers on the "Conference on Prestressed Concrete", Feb., 1949.

According to these definitions, Mr. Schorer's very interesting suggestion of prestressed wire units would be described as pretensioning, since the wires are tensioned against removable compression members before concreting, the prestress being transmitted later to the concrete by bond. On the other hand, Professor Magnel's method of tensioning a sandwich cable, described by E. R. Schofield (ENR Dec. 30, 1948), would be classified as post-tensioning since the tensioning is carried out against hardened concrete. The prestress in this case is transmitted to the concrete directly by anchorage plates and the method thus differs substantially from Mr. Schorer's process.

P. W. ABELES
Chartered Structural Engineer
London, England

"Speaking of truck shovels..... Why did you buy a MICHIGAN?"

"Because it's Really Built!"

What other ⅜ or ½ yard truck shovel has *all* these features?

. . . *cast steel turntable* with deck and side-frames cast in one piece, insuring constant true alignment of shafts and bearings, longer trouble-free service.

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a brand new
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TRUCK CRANE
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for as little as $10,250
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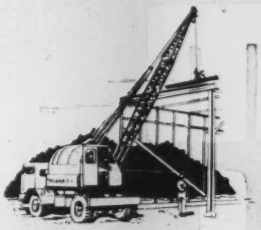
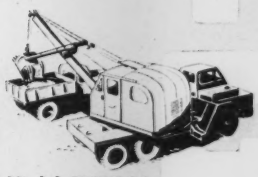
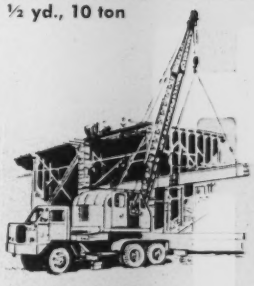


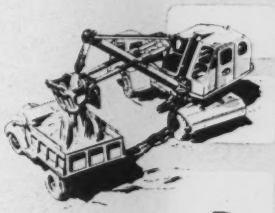
Model T6K
⅜ yd., 6 ton



Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton



Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

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500 Second Street, Benton Harbor, Michigan, U.S.A.

American DiesElectric* cranes hoist and swing with TIMKEN® bearings

DIESEL power for the deck and electric power for the travel mechanism distinguish this completely new DiesElectric locomotive crane. And to assure long, trouble-free service, Timken® tapered roller bearings are used on the slewing reverse shafts, slewing bevel gears, drum shaft, boom hoist sprocket, reduction gearing between motors and truck axles, and block hook.

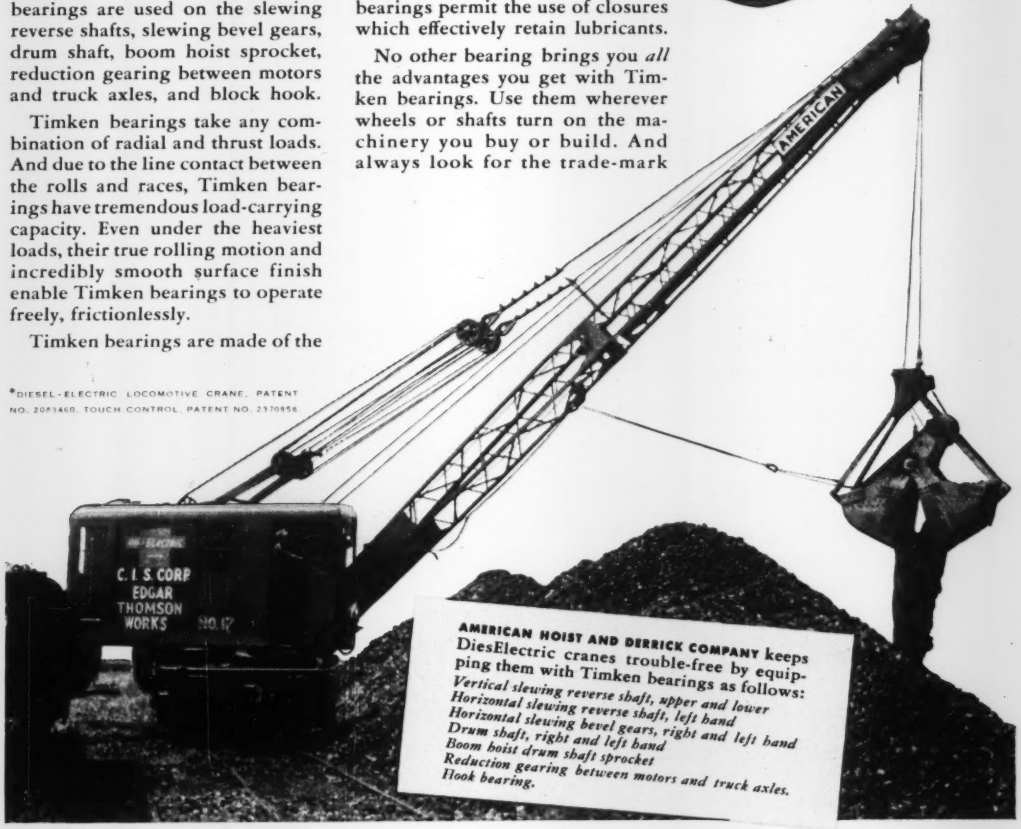
Timken bearings take any combination of radial and thrust loads. And due to the line contact between the rolls and races, Timken bearings have tremendous load-carrying capacity. Even under the heaviest loads, their true rolling motion and incredibly smooth surface finish enable Timken bearings to operate freely, frictionlessly.

Timken bearings are made of the finest steel ever developed for tapered roller bearings—Timken fine alloy steel—and normally last the life of the machinery in which they are used. Maintenance time and material are saved because Timken bearings permit the use of closures which effectively retain lubricants.

No other bearing brings you *all* the advantages you get with Timken bearings. Use them wherever wheels or shafts turn on the machinery you buy or build. And always look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

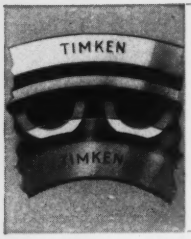
This symbol on a product means its bearings are the best.

*DIESEL-ELECTRIC LOCOMOTIVE CRANE, PATENT NO. 2053460. TOUCH CONTROL, PATENT NO. 2370856.



AMERICAN HOIST AND DERRICK COMPANY keeps DiesElectric cranes trouble-free by equipping them with Timken bearings as follows:

Vertical slewing reverse shaft, upper and lower
Horizontal slewing reverse shaft, left hand
Horizontal slewing bevel gears, right and left hand
Drum shaft, right and left hand
Boom hoist drum shaft sprocket
Reduction gearing between motors and truck axles.
Hook bearing.



POSITIVE ROLLER ALIGNMENT

Wide area contact between roll ends and rib of the cone prevent Timken roller bearings from skewing. Result: bearings roll easier, last longer.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TAPERED ROLLER BEARINGS

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